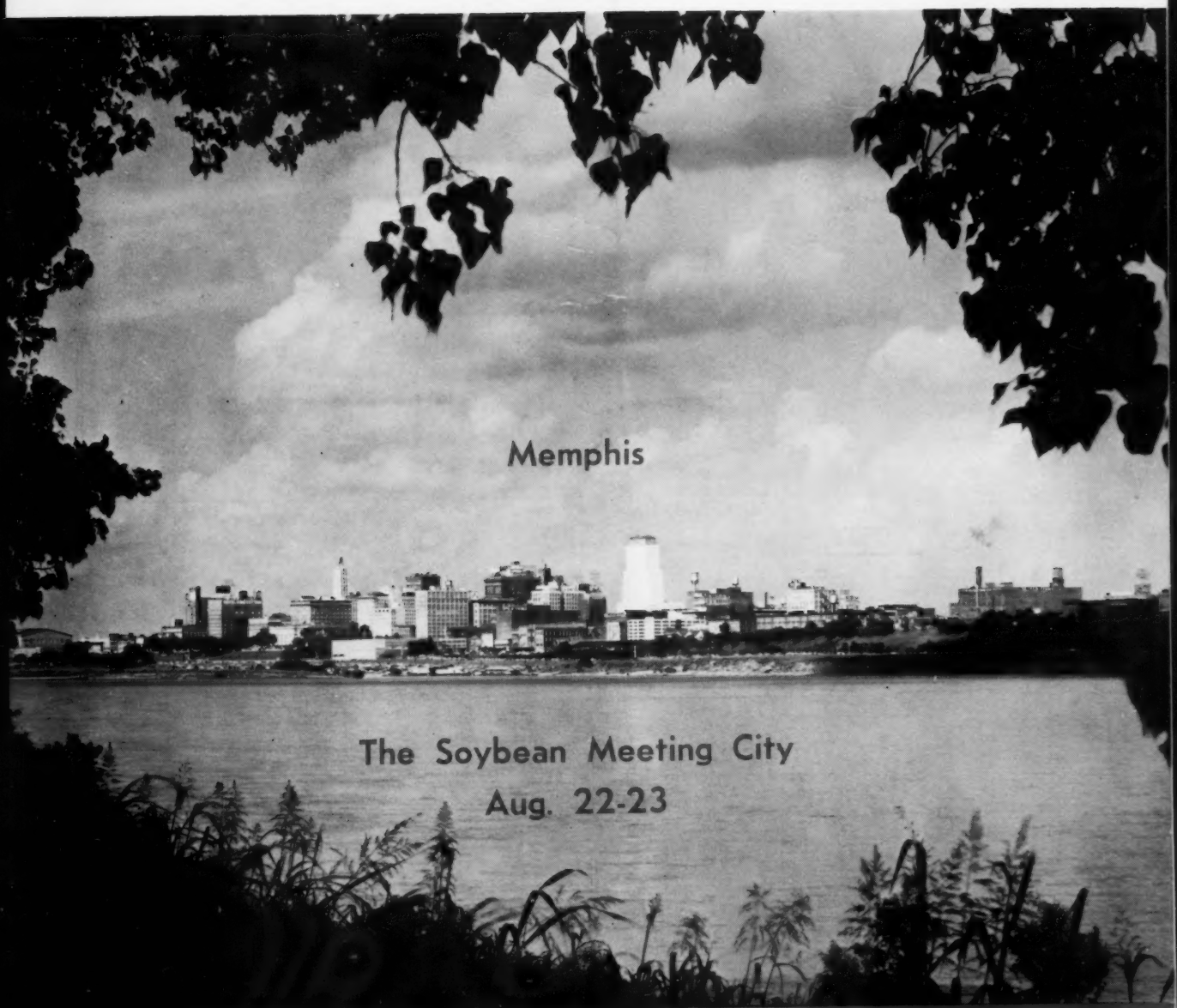
# THE Soybean Digest




JUNE • 1960

VOLUME 20 • NUMBER 8

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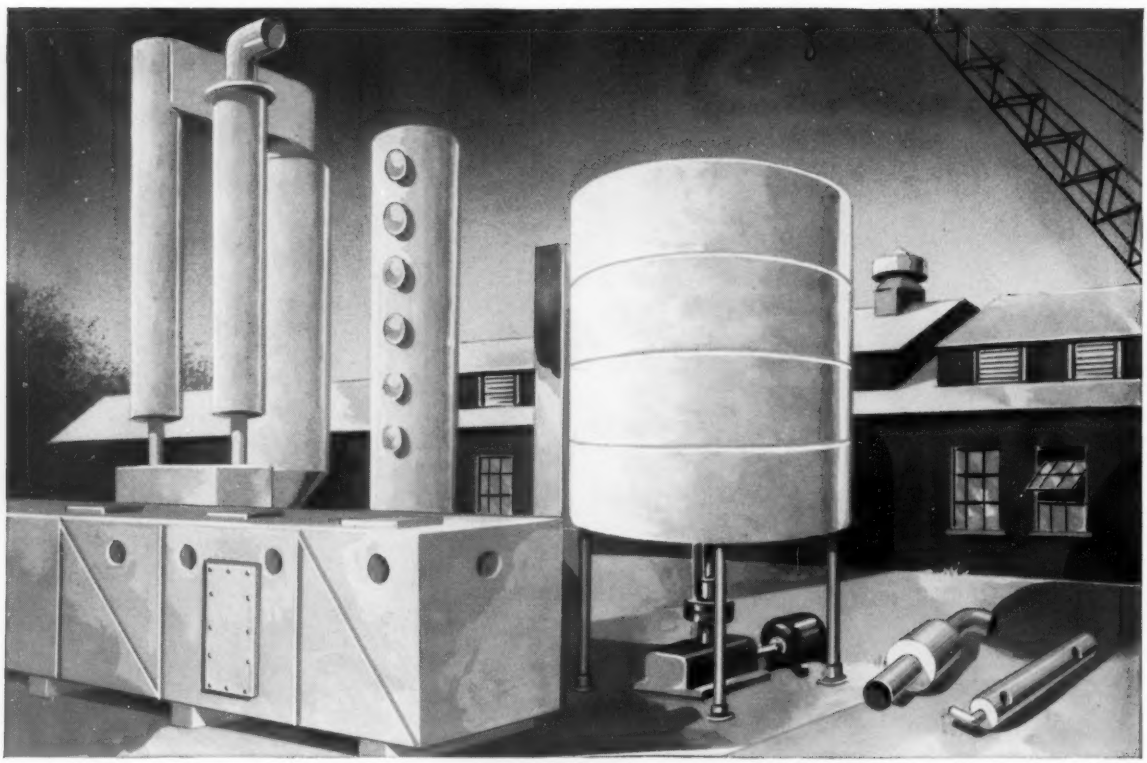

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# THE Soybean Digest

REG. U. S. PAT. OFF.

Official Publication of American Soybean Association and Soybean Council of America, Inc.

HUDSON, IOWA

Vol. 20 | June, 1960 | No. 8


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## THE SOYBEAN DIGEST

EDITOR ..... *Geo. M. Strayer*

MANAGING EDITOR ..... *Kent Pellett*

BUSINESS MANAGER ..... *Geo. McCulley*

CIRCULATION MANAGER
*David B. Bramson*

OFFICES
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EXECUTIVE OFFICES: *Hudson, Iowa*
PHONE: *TAylor 5-3296*

CABLE ADDRESS:
*Agriport, Hudson, Iowa*

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**Objectives of the American Soybean Association** include the bringing together of all persons interested in the production, distribution and utilization of soybeans; the collection and dissemination of the best available information relating to both the practical and scientific phases of the problems of increased yields coupled with lessened costs; the safeguarding of production against diseases and insect pests; the promotion of the development of new varieties; the encouragement of the interest of federal and state governments and experiment stations; and the rendering of all possible services to the members of the Association.

## EDITOR'S DESK

. . . By GEO. M. STRAYER

**SHOULD PLACE SOY OIL ON RELIEF LIST** One of the best food buys in the world today is U. S. soybean oil. At no place is a high-quality edible oil available in such large quantities and so low in price. Our ability to consume edible oil in the United States has not kept pace with our ability to produce it—nor with the market for protein meal which is the other component of soybeans.

In the previous two sessions of Congress the Secretary of Agriculture has been given the authority, the funds, and the machinery with which to make U. S. fats and oils available on the list of commodities available to the church and charity organizations for relief feeding purposes. There are no fats or oils in that category today—have been none since butter surplus accumulation was ended by CCC. The religious and charitable agencies have asked for fats and oils repeatedly. Organizations representing cottonseed and soybeans have asked for inclusion. None have been made available.

Through the years the soybean industry has asked for little help from government. We have absorbed 20 million acres of cropland which came out of other crops, and we have gone about our business of growing, handling, processing and selling our products. Now we have an oil problem—and some help would be welcomed.

We hope the Secretary will see fit to place fats and oils on the commodity list now. CCC owns some stocks of soybeans. There will be further stocks from 1959-crop takeover. The 1960 crop now seems headed for far larger acreage than had been anticipated, due to weather conditions. Soybean prices could sag materially without some help on oil. Now is the time for action by the Secretary of Agriculture. The requests have been made, the justification given, and the gains appraised. Let's hope for immediate action.

**WHY YOU CAN PLANT BEANS LATE** Perhaps more than any other crop, soybeans are at the mercy of the weather. On June 1 the season is late through much of the Cornbelt and the Midsouth. Small grain was not seeded. Too wet. Corn has not been planted. Too wet. Much of the plowing remains to be done. Too wet.

It probably adds up to the largest soybean acreage in history. The Mar. 1 planting intentions report placed it only slightly below the 1958 crop, but every day of delay in corn planting means additional soybean acreage. The cotton area is in the same situation.

Added acreage does not always mean added bushelage in proportion. Late planting means lower per-acre yields, more weed problems, some abandonment. But in a situation where it is too late for other crops to be planted there is little choice but to go to the one crop which will come through—soybeans. It appears now we will have plenty—and perhaps more!

Which brings into focus again the reason why soybeans can be planted late and still mature. One-hundred-day corn takes approximately 100 days to mature, no matter when planted. The maturity cycle on soybeans is governed by photoperiodism—the length of day. The same variety of soybeans planted on May 1, June 1 and July 1 will show very little difference in date of maturity. There will be yield and growth differences, but when the length of day reaches a certain stage the soybean matures, regardless of how long the plant has been growing. Soybeans are one of only two commercially grown crops where this is true. It explains why we always fall back on soybeans to grow a crop on the acreage which cannot be planted to the other commercial crops.

**LOSE THREE INDUSTRY LEADERS** The untimely death of Porter Hedge, who has written our Washington Digest section since 1944, saddened all of us who have worked with him. Only 52 years of age, Porter had been in poor health for a number of years, but he had continued to work at his avowed task of interpreting Washington to American Agriculture. We will miss him by the absence of his nose for news and his ability to obtain from bureaucracy the information and the statistics needed.

Another death which saddened the industry was that of Harold A. Abbott, for many years an executive of both the National Soybean Processors Association and the Funk Brothers Seed Co. Harold retired only a short time ago, moved to Florida to live out his days, and passed away on May 28.

Clyde M. Woodworth, University of Illinois professor emeritus of plant genetics, died May 23 at Urbana, Ill. A member of the University of Illinois faculty for 36 years, he was one of those credited with the development of soybeans as a major crop in Illinois. He was an honorary life member of the American Soybean Association.

All three men have left their marks on the soybean industry of the United States—in different ways—by the contributions they made to progress.

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**THE PEABODY, meeting site.**

# Memphis—the Soybean Meeting City

MEMPHIS, TENN., the soybean meeting city this year, is the agricultural and commercial capital of the Midsouth.

First joint meetings of the American Soybean Association and the National Soybean Processors Association will be held there, at Hotel Peabody, Aug. 22 and 23.

Memphis lies in the heavy soybean producing area of the Midsouth, near the rich, black Delta lands where soybeans thrive.

It may not be generally realized that the six Midsouth states of Missouri, Arkansas, Kentucky, Tennessee, Louisiana, and Mississippi, now produce almost a third of the U. S. soybean crop!

Soybean production took an amazing jump—almost tripling—in these six states in the 5 years following the last ASA-NSPA meetings in Memphis in 1954. In 1954 total production in these states was 48.5 million bushels, about one-seventh of the 341 million bushels produced nationwide that year. But in 1959, the six states grew 144 million bushels out of a national crop of 538 million bushels!

Soybean production has been expanding far more rapidly in the Midsouth than it has nationally. Greatest increases in production have come in Arkansas which jumped almost six-fold, from a 10-million-bushel crop to 56.7 million in 6 years; Missouri, which doubled production, from 27.5 to 56.7 million bushels; and Mississippi, which quadrupled its crop, from 5 to 20 million bushels. There have also been sizable increases in soybean production in Tennessee, Kentucky and Louisiana the past 6 years.

Arkansas ranked fourth in the nation in soybean production in 1959, behind only Illinois, Iowa, and Indiana.

Memphis has four soybean processing plants, Buckeye Cellulose Corp., Cargill, Inc., Ralston Purina Co., and Swift & Co. The city also has two vegetable oil refining plants, the HumKo Co. and Southern Cotton Oil Division of Wesson Oil & Snowdrift.

Memphis, in addition to being a soybean center, has long been the world's leading cotton market, and in the center of the Cotton Belt. On Memphis' famed Front Street, or "Cotton Row," more cotton changes hands than in any other spot in the world.

It is the home of the National Cotton Council and the Cotton Carnival that has developed into one of the nation's big annual celebrations. The Cotton Exchange and the Memphis Board of Trade occupy joint quarters at the corner of Front Street and Union Avenue.

### Joint Meetings

For the past several years, since the last meeting at the Peabody in Memphis in fact, the ASA and NSPA meetings have been held at the same time in the same hotel, with one immediately following the other. But this will be the first year when the two groups will hold joint sessions.

The processor and producer groups will hold independent sessions Monday and Tuesday mornings, and will hold joint sessions in the afternoons. The National Soybean Crop Improvement Council advisory board will meet at the same time with separate sessions both mornings.

A joint annual banquet for the three groups will be held Monday evening, Aug. 22.

The program committees have been meeting and program plans are already well along. We are able to carry the preliminary program in this issue.

Make your hotel reservations now. Write Hotel Peabody, Memphis, Tenn. A block of rooms is reserved for the soybean meetings, so tell the hotel you are attending the American Soybean Association convention or the National Soybean Processors Association meeting and they will have accommodations for you.

### Committees

Following are the American Soybean Association committees, most of which will function during the ASA convention:

**Executive.** Carle G. Simcox, Assumption, Ill., chairman; John Sawyer, London, Ohio; Charles Simpson, Waterville, Minn.; David G. Wing, Mechanicsville, Ohio; and Geo. M. Strayer, Hudson, Iowa.

**Convention.** John Butterfield, Pana, Ill., chairman; John Evans, Montevideo, Minn.; and Walter M. Scott, Tallulah, La.

**Market development.** Ersel Walley, Fort Wayne, Ind., chairman; Wing; Harry Gatton, Jr., Rumsey, Ky.; Butterfield; and Simpson.

**Resolutions.** Jake Hartz, Jr., Stuttgart, Ark., chairman; Scott; Evans; Butterfield; W. M. Wallace, Woodslee, Ontario, Canada; O. H. Acom, Wardell, Mo.; Glen Myers, Memphis, Mo.; Wing; and Hubert Baker, Dalton City, Ill.

**Nominations.** Evans, chairman; Baker; and Chester B. Biddle, Remington, Ind.

**Legislative.** Simpson, chairman; Myers; Simcox; and Sawyer.

**Awards.** Simpson, chairman; Evans; and Biddle.

*Make your hotel reservation direct with Hotel Peabody, Memphis, Tenn.*

# And Here Is Your Preliminary Program

## ASA-NSPA Meetings

### Monday, Aug. 22

**9:00 a. m.**

Meeting, National Soybean Crop Improvement Council advisory board.

Annual business meeting, National Soybean Processors Association.

Registration desk open, American Soybean Association.

**10:00 a. m.**

First session, American Soybean Association.

C. R. Weber, associate professor agronomy, Iowa State University, Ames: "The First World Agricultural Fair at New Delhi."

Conrad Leslie, Francis I. du Pont & Co., Chicago, Ill.: "Functions of the Futures Market in Soybean Sales."

Other speakers to be announced.

**1:30 p. m.**

Joint session, American Soybean Association, National Soybean Processors Association, and National Soybean Crop Improvement Council advisory board.

Henry Loeb, mayor of Memphis: "Welcome."

Siert Riepma, president, National Association of Margarine Manufacturers, Washington, D. C.: "The Margarine Industry of the World."

Howard L. Roach, president, Soybean Council of America, Waterloo, Iowa; and Fred R. Marti, area director, Soybean Council, Rome: "The Program of the Soybean Council."

Darryll Francis, first vice president, Federal Reserve Bank, St. Louis: "Agri-Business in the Mid-south."

Central Soya Co., Inc., film: "Tomorrow's Foodpower."

**6:00 p. m.**

Reception.

**7:15 p. m.**

Annual banquet, American Soybean Association and National Soybean Processors Association.

### Tuesday, Aug. 23

**8:30 a.m.**

Meeting, National Soybean Crop Improvement Council advisory board.

Board of directors, National Soybean Processors Association.

**9:00 a. m.**

Annual business meeting, American Soybean Association.

**10:00 a. m.**

Session, American Soybean Association.

"New Developments in Soybean Production," speakers to be announced.

**1:30 p. m.**

Joint session, American Soybean Association and National Soybean Processors Association.

Panel discussion on the work of the National Soybean Crop Improvement Council, moderated by J. W. Calland.

T. A. Hieronymus, professor, agricultural marketing, University of Illinois: "What Will We Get for 1960-Crop Soybeans?"

Panel discussion: "Factors That Affect Prices and Price Trends," with industry representatives, Glenn Pogeler, North Iowa Cooperative Processing Association, Mason City, Iowa, representing processors; Robert Alexander, Ralston Purina Co., St. Louis, mixed feed manufacturers; Loren Johnson, Continental Grain Co., New York City, exporters of soybean meal and oil; James W. Young, Jr., Crawfordsville, Ark., producers; Walter W. Sikes, director fats and oils division, Foreign Agricultural Service, domestic and export oil markets.

## Exhibits Will Be Center of Activity

AS USUAL, the exhibits will be the informal center of activity of the soybean meetings this year. Firms serving the soybean industry will be represented at Memphis. From advance sales thus far, it appears there will be an early sellout of available exhibit space.

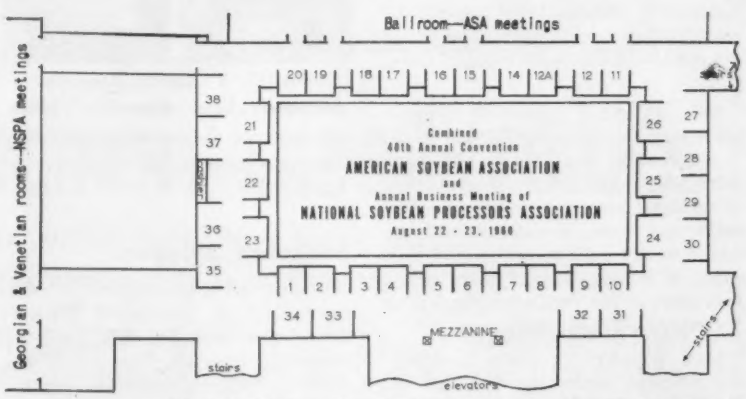
Exhibit facilities at the Peabody are ideal. Every person attending any meeting during the 2 days will have to pass by the exhibit booths this year.

"We anticipate there will be more demands for exhibit space than we can make available this year," says Geo. McCulley, ASA business manager. "For desirable space it is imperative that you reserve space promptly."

For your choice of available space contact: Geo. McCulley, business manager, American Soybean Association, Hudson, Iowa.

The following firms are among those that had reserved space at press time:

1—Shanzer Manufacturing Co.; 3, 4—A. T. Ferrell & Co.; 5—Albert Dickinson Co.; 6—Burrows Equipment Co.; 7, 8—Soybean Council of America, Inc.; 9, 10—Crippen Manufacturing Co.; 15—Aeroglide Corp.; 16—V. D. Anderson Co.; 22—California Spray-Chemical Co.; 23—Davenport Machine & Foundry Co.; 26—Hubert Phelps Machinery Co.; 27—Langston Bag Co.; 30—Urbana Laboratories; 32—Merrill Lynch, Pierce, Fenner & Smith, Inc.; 33—Seedburo Equipment Co.; 34—Signal Oil & Gas Co.; 35—Simon-Carter Co.; 36—Hot Spot Detector, Inc.;—The Soybean Digest; 2—French Oil Mill Machinery Co.; 29—Columbian Steel Tank Co.




**MEZZANINE floor plan showing meeting rooms and exhibit booths.**

# Soy Curd Can Add Variety to Diet

**MRS. WEN CHIU tests the calcium content of soy curd made from several varieties of soybeans.**

VEGETABLE soybeans and many soy products can be used as human food. And research at the University of Illinois with soy curd, one of these edible soy foods, should expand the use of soybeans.

Soy curd, a cottage-cheese-type food, is made from soybean milk, which is extracted from dry mature soybeans. The curd may be eaten raw or cooked with vegetables or meat.

Mrs. Wen-Chiang Chiu, a graduate student in the department of home economics, has experimented with several recipes using soy curd. These products have received high ratings from the members of the taste panel who judged these foods. They may some day add variety to American diets.

However, Mrs. Chiu, whose home is in Formosa, is chiefly concerned with the calcium content and quality of soy curd made from several varieties of soybeans. She hopes this research will result in a high-quality soy curd with increased calcium content.

This calcium is important to people living in the Orient. Cow's milk is not readily available and is high priced. Soy milk is not a good source of calcium, but soy curd may be. To make soy curd, a calcium salt is added to soy milk to precipitate the curd. It is the amount of calcium that stays in the curd after the whey is drained off that counts.

Mrs. Wen-Chiang Chiu is doing her research under the direction of Dr. Frances Van Duyne, head of the foods and nutrition division of the department of home economics.

Soy curd was displayed along with green vegetables and dry mature soybeans used in various ways during the recent University of Illinois Farm and Home Festival.

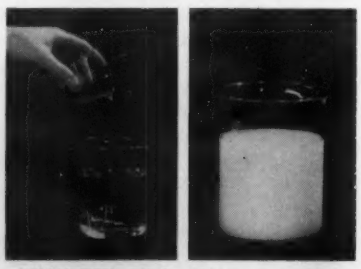
## Staley Co. Is Marketing New Lecithin Concentrate

A NEW FLUID-TYPE lecithin concentrate developed especially for use in formulating water-based paints is being marketed by the A. E. Staley Manufacturing Co., Decatur, Ill.

Brand-named "Emultex R" lecithin compound, the new Staley product is credited with improving stability of water-based paints by stabilizing the emulsion, preventing pigment migration, retarding pigment settling and preventing hard pigment pack in long storage.

Recommended for all types of water-based paints "Emultex R" lecithin compound is compatible with all usual thickeners such as casein, soy protein and carboxymethyl cellulose. It is a complex mixture of natural soybean-derived phosphatides containing lipositols, cephalin and true "chemical" lecithin.

Technical data, samples and other information are available from Staley representatives and branch offices across the country, or by writing the company at Decatur, Ill.



**"EMULTEX R" lecithin compound is completely water dispersible. Photo above shows dispersion of new Staley fluid-type lecithin concentrate in water.**

## Midsouth Shippers

The annual convention of the Midsouth Soybean and Grain Shippers Association will be held at Hotel Peabody, Memphis, Tenn., Aug. 2-3, Paul C. Hughes, secretary, has announced.

**Porter M. Hedge**

## P. M. Hedge, Editor of Digest Column, Dies

PORTER M. HEDGE, 52, Washington columnist for the Soybean Digest and a widely known writer on farm subjects, died at his home at Fairfax, Va., May 21. He suffered from a heart condition complicated with rheumatic fever.

Mr. Hedge became Washington columnist for the Digest in 1944, and his regular monthly column on soybean subjects in the nation's capital in this magazine has been closely followed by our readers since.

He was associated with Wayne Darrow in editing the Washington Farm Letter, a weekly newsletter devoted to farm problems and legislation.

Mr. Hedge was born in Oskaloosa, Iowa, and was graduated from Iowa State University at Ames in 1933. He was formerly associated with the Associated Press bureau in Des Moines, Iowa, the Temple, Tex., Telegram, and the Agricultural Adjustment Administration in Des Moines and Milwaukee.

He is survived by his wife, Marguarette, a son, Porter, and two sisters.

Congressman E. C. Gathings of Arkansas commented in the House of Representatives May 25: "Many of us knew of his poor health, but we were poorly prepared to learn of his passing. . . . While Porter Hedge wrote on all aspects of agriculture, soybean growers will perhaps miss him most, for he was widely acquainted throughout the soybean industry and his columns on the soybean situation reached most of the commercial soybean growers of the belt.

"But, Porter Hedge will be remembered most because of his integrity and his pleasant approach to all matters. He was a fine man and a devoted friend to agriculture. In a time when farmers need friends who can tell their story, they have lost one of the very best."

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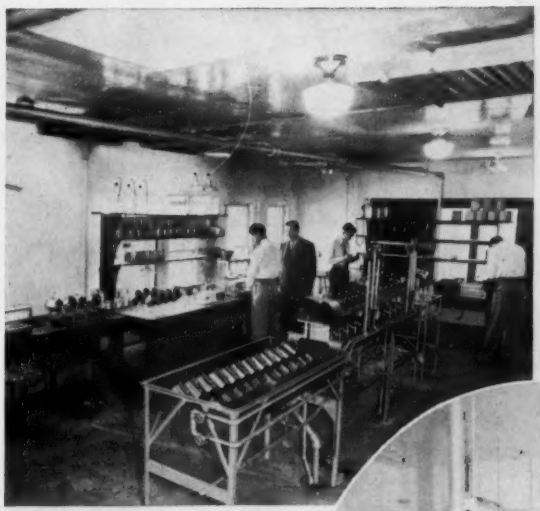

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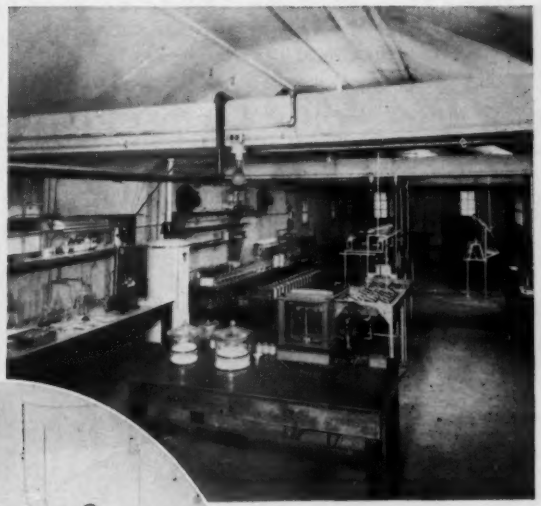

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# THE NEWS IN BRIEF

## THE CROP, MARKETS AND OTHER ITEMS OF NOTE

**Planting Season Is Late**

With continued rainy weather in the Midwest Cornbelt, the possibility of a massive shift of corn acres into soybeans was increasing as the Digest went to press. Dallas E. Western, Quaker Oats Co., commented in late May: "The very heart of the corn and soybean belt is in trouble. In most areas, not a great amount of progress has been made during the past 2 weeks."

However, **many farmers were still planning to plant corn heavily,** the weather permitting. The season was nearer normal in western Iowa, Kansas, Nebraska, the Dakotas, and southwestern Minnesota. Corn planting was about in schedule in Ohio where there was no shift to beans because of weather.

Planting was later than usual in the Midsouth, and the Weather Bureau called progress behind normal in Middle Atlantic states.

Geo. E. Spain, North Carolina State College: Estimated 75% of acreage planted, week to 10 days late, in little or no difficulty at this time.

**Demand For Seed Is Brisk**

A brisk demand for soybean seed is reported many places, and **shortages of good, high-germinating seed are reported.** Germination is poor in many areas and some farmers plan to sow their seed thick.

A possible demand for earlier-than-normal varieties for late planting is forecast.

A soybean acreage increase of 15% to 20% is predicted in Kansas. Tyler Terrett, West Tennessee Soya Mill, Tiptonville, sees a 20% acreage decrease in Tennessee because of the presence of the soybean cyst nematode.

R. H. Peck, River Canard, Ontario, looks for a 10% acreage decrease in southwestern Ontario, though weather conditions will decide the final outcome there. The normal planting of spring grain was made in Ontario. (Canada's soybean crop—grown mostly in Ontario—at 6.8 million bushels set a record in 1959 for the third successive year.)

**World Record In 1960?**

**1960 production of soybeans may again come close to a new world record,** according to USDA's Foreign Agricultural Service. The assumption is based on a probable larger soybean crop in the United States, at least as large a crop in Communist China as in recent years due to the importance of soybeans as a food crop in China proper and as an export crop in Manchuria, and the trend to expanding production in Canada and Brazil.

**Some Movement In May**

There was increased selling of farm soybeans in May due to the approaching maturity of price support loans, according to USDA reports. There was fairly heavy movement and cleanup of soybeans in some areas as the take-over deadline approached.

J. E. Johnson, Champaign, Ill., reported: "Some selling along until there is no large amount of beans back on farms, other than seed requirements. Stored beans in elevators practically gone other than a local situation. Need for operating capital one factor that has moved soybeans. Farm credit extremely tight."

**Announces New Storage Rates**

Over the solid opposition of the grain storage industry, Secretary of Agriculture Benson has announced revised uniform grain storage agreement rates to become effective July 1.

Under the new schedule storage rates are reduced an average of about 3¢ a bushel on an annual basis, or from 16½¢ to 13½¢. This represents an

average reduction of 19%. Except for oats, the annual storage rate for commingled storage of all the commodities including soybeans will be the same—fractionally above 13½¢ a bushel.

**Reports On Export Business**

Archer-Daniels-Midland Co., Minneapolis, now believes the season's export total of soybeans could exceed the 125 million bushels predicted by USDA.

Grain vessel clearance of soybeans from the Port of New Orleans in April was almost the same as a month earlier, 4.2 million bushels.

The Spanish government was asking for bids on 40,000 tons of crude soybean oil for import as the Digest went to press. This is in addition to 78,000 tons authorized some weeks ago.

Japan's imports of oilseeds in 1959 reached a **record 1½ million metric tons, up one-fifth from the previous year and almost double the 1952-56 average,** reports Foreign Agricultural Service, USDA.

During the past year the United States supplied 951,232 tons (35 million bushels) or 95% of Japan's total soybean imports, compared with 777,436 tons (28.6 million bushels) which was 86% of the total of 904,700 imported by Japan in 1958.

**Exports of U. S. soybean oil into Pakistan in 1960 may be stepped up considerably** from the 12,426 short tons shipped in 1959, according to FAS. Edward James, technical consultant for the Soybean Council of America, was recently in Pakistan providing technical assistance on the use of soybean oil in vanaspati (vegetable ghee) and for blending with domestically produced oils. As a result of this technical help, several processors plan to import some soybean oil this year. The oil will probably move under P. L. 480.

Vanaspati production in Pakistan is expected to reach 36,000 short tons this year, an increase of 5,600 tons from 1959, and more than 50% above the 22,850 tons produced in 1958.

USDA has announced issuance of an authorization to Pakistan to finance purchase of up to $6 million worth cottonseed or soybean oil from U. S. suppliers under P. L. 480. The authorization provides for purchase of about 21,000 metric tons. Sales contracts made between May 20 and July 30 will be eligible for financing, with shipment between May 20 and Aug. 31.

**Casein Amendment Unsettled**

Final disposition of HR 9768, with amendment to continue the suspension of the import duty on casein tacked on by the Senate finance committee, was in the hands of a conference committee as the Soybean Digest went to press. Fate of the amendment should be known within a few days. **Attempts were to be made to continue the suspension of the import duty for only 1 year rather than the 2 years provided in the amendment.**

Cheap imported air-dried milk casein, with no sanitation of chemical standards, is directly competitive in some fields of usage with U. S. produced isolated soy protein, and tends to follow isolated soy protein prices in the U. S. market. It was the position of the American Soybean Association that the duty on casein should be restored.

**Loss of Soybean Leaders**

Three soybean industry leaders in different capacities died in late May. They were Porter M. Hedge, editor of the Soybean Digest's Washington Digest column since 1944, noted elsewhere; Harold A. Abbott, manager of the Funk Bros. Seed Co., Bloomington, Ill., plant until his recent retirement, and for a number of years treasurer of the National Soybean Processors Association; and Clyde M. Woodworth, University of Illinois professor emeritus of plant genetics, who was credited with being one of the pioneers in the development of soybeans as a major crop in Illinois. Dr. Woodworth was an honorary life member of the American Soybean Association.

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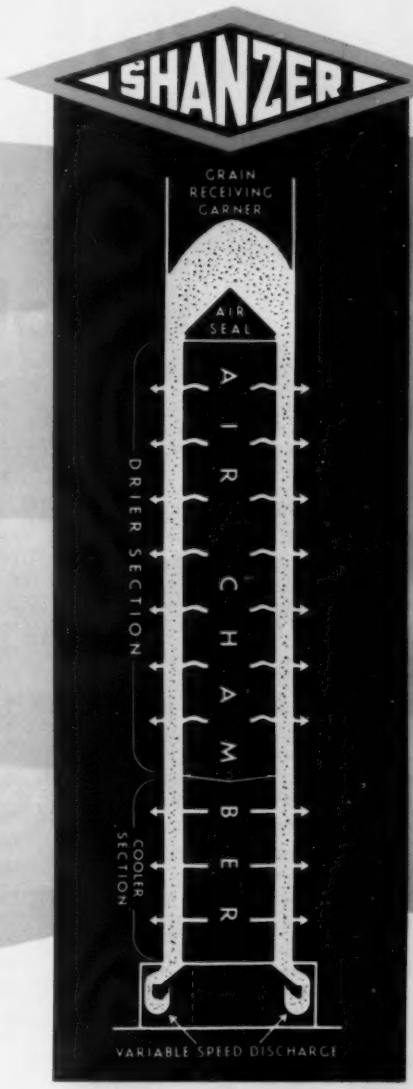


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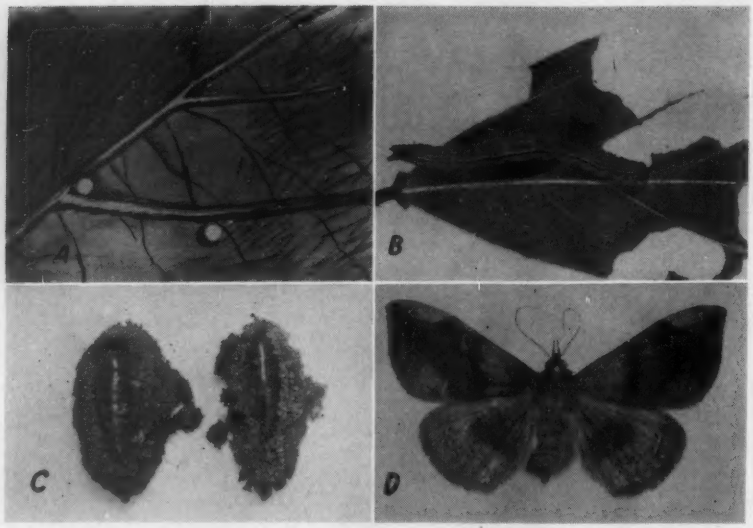



from N. C. Extension Circular 450

**Velvetbean caterpillar: A, eggs; B, larva; C, pupae; D, adult.**

**Grape colaspis adult, 10 times natural size.**

# Control of Insect Pests

## *Soybeans can often sustain severe damage without appreciable reduction in yield*

*(Staff Written)*

THE PROBLEM of insect pests on soybeans is seasonal and regional and even local in nature. In general, Northern States have not looked on pests as a major problem for the soybean grower. In the South, pests are far more serious.

The range of severity of the insect problem is indicated by the fact that it can be disregarded in some northern areas but in some places in the South a crop cannot be produced unless the insects are controlled.

Says Wayne J. Colberg, extension entomologist, Fargo, N. Dak.: "We have no serious insect problems in soybeans." William J. Hantsbarger, extension entomologist at Brookings, S. Dak., says soybeans have fewer insect problems in South Dakota than any other crop except sorghum, though some pests do attack soybeans and occasionally cause widespread damage. And R. P. Holdsworth, Jr., extension entomologist, Columbus, Ohio, writes that insect pests on soybeans have not been of enough economic importance so that recommendations for their control have been issued.

On the other hand, W. C. Nettles, leader, extension entomology, Clemson, S. C., states in the comprehensive Circular 450, "Soybean Insects and Their Control," that successful production of soybeans in South Carolina depends largely on control of certain insects that infest the crop, and that soybeans became a multimillion dollar industry in that state only when effective insecticides were developed. This situation is true of other southern soybean states in some degree.

Many different insects now damage soybeans, with the amount of damage varying from year to year. Insects can usually be controlled through the use of a good insecticide properly timed.

But there are some points to remember concerning control of insects on soybeans:

1—Soybeans are a comparatively low-value-per-acre crop and producers should hesitate to go to great expense for insect control unless necessary.

Quoting Grover C. Dowell, extension entomologist, University of Arkansas: "Low return per acre makes a farmer cautious about spending unnecessary money for control of insects. . . . If a person applies insecticides indiscriminately, he will lose his shirt."

Says George D. Jones, in charge entomology extension, North Carolina State College: "We have one area in the state . . . in which soybeans when planted as a double crop for a given year, can be very seriously infested with the Mexican bean beetle. In this part of the state it is definitely a question of the number of applications of insecticides that a grower can afford to apply to the crop. In other words, with a yield of 30 to 40 bushels per acre at a value of $50 to $60 per acre, a grower cannot afford to put on from 6 to 10 applications of an insecticide and pay some $25 to $30 for the insecticide bill."

2—Soybeans can stand heavy damage, at least at certain periods of their growth, without great loss in yield. This is true both of the seed or seedlings and of the foliage.

Floyd D. Miner, University of Arkansas entomologist, reports that in one experiment 75% mechanical defoliation to simulate bean leaf beetle damage during the early part of the flowering period did not significantly affect the yield. Defoliation at a later period did affect yield, but the figures were variable.

Dr. Miner tells of another experiment in which stands of soybeans were artificially thinned at various

rates and dates to indicate possible effects on yield by three-cornered alfalfa hoppers. Stands were thinned from 15% to 45%, but the reduction in yield due to thinning was not statistically significant.

Dr. Miner says the test on defoliation is being continued.

Harold Gunderson, Iowa State University entomologist, reports Iowa work that indicates seed corn maggots may destroy up to half of the planted seeds without affecting yields.

Says Dr. Gunderson: "I have seen severe early damage from grape colaspis and clover root curculio larvae but at harvest time yields appeared to be quite satisfactory. Cutworms attack soybeans rather severely in the Missouri River bottoms but again farmers indicate that there doesn't seem to be a loss in yield as a result of the reduction in stand."

Quoting Melvin Burton, assistant entomologist, Mississippi State University: "I feel that damage attributed to insects on soybeans has often been exaggerated. Experiments conducted by the entomology department here in Mississippi have indicated that the bean leaf beetle can eat half of the foliage and yet cause only 15% to 20% reduction in yield. Field infestations of this magnitude have never been reported."

Such reports do not mean that control of insects is never needed, but that damage does need to be evaluated before the expense of control is undertaken. In Arkansas the general recommendation is that soybeans be treated where 40% of the foliage has been consumed by insects providing insects are actually present and damage is still going on.

Again quoting Dr. Burton: "Generally speaking, when only one of the insect pests is present damage is not severe because such factors as environmental conditions, parasites, and predators tend to keep populations below economic levels. When conditions favor the buildup of several of these it may be necessary to take rapid action to harvest a normal crop."

3—The rank growth of soybeans on some fertile soils makes it impossible to use tractor-mounted dusters or sprayers and prevents good penetration of insecticides when applied by airplane.

Dr. Miner points out that extensive research has not yet been done on soybean pests. For instance, the effect of DDT is not well known. In Arkansas tests it was found that DDT controlled the bean leaf beetle, but sprayed plots had put out no new leaf growth several weeks after spraying. DDT is known to stunt both garden beans and soybeans.

Extensive research programs on soybean pests are now under way at some southern state experiment stations.

Dr. Burton points out some of the problems: "We are cooperating with a number of farmers in seeking the best insecticidal controls that can be applied with the least cost. When this is completed most likely the insects will develop resistance to the recommended chemicals and the cycle will have to be completed. Insects are man's chief competition and there is no evidence that the struggle will diminish as time passes on."

## Methods of Application

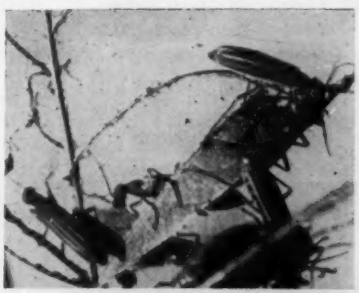
Insecticides can be applied either as sprays or dusts, the sprays generally being considered more satisfactory due to the better equipment available. Sprays give slightly better control than dusts and have a longer residual action.

Tractor-mounted sprayers (low-gallonage, low-pressure weed-type) can be used. Some of the soybeans will be lost when they are pushed down under the wheels. Quoting J. O. Rowell, agricultural extension service, Blacksburg, Va.: "Apply the recommended amount of the insecticide in 20 to 30 gallons of water. Sprayers should be calibrated accurately before starting the spraying operation. With proper spray nozzles, from 30 to 40 pounds of pressure is sufficient."

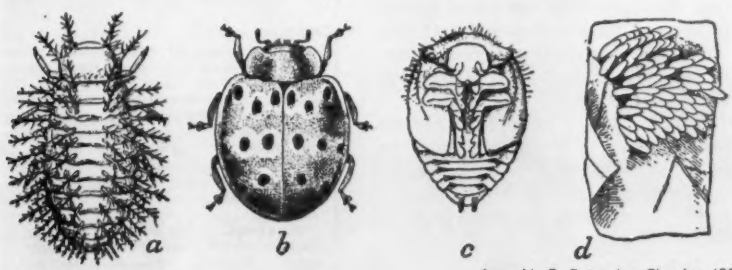
Airplanes are used for spraying to control insect outbreaks over large

Larvae and adults of the Mexican bean beetle and typical injury to bean leaf. Twice natural size.

Japanese beetle adult. A little more than four times natural size.



Striped blister beetles feeding on soybean foliage.




from N. C. Extension Circular 450

Mexican bean beetle: a, larva; b, adult; c, pupa; d, eggs.

Common white grub. About three times natural size.

areas. Extension men and growers frequently work together to bring such outbreaks under control.

In eastern Virginia in 1959 there was such a bad outbreak of corn earworms, with some other caterpillars present, that it looked like most of the soybeans following small grains would be a total loss. In 15 of the most heavily infested counties about 43,000 acres were treated, using both airplanes and ground equipment. DDT and toxaphene were used in

Corn earworm. About 1½ times natural size.

combination to control the complex of caterpillars present. Seven out of eight of the farmers who sprayed felt they got their money's worth in increased yield.

Growers are warned against using soybeans that have been sprayed with most chemicals for grazing, hay or silage. Entomologists specifically mention that beans treated with aldrin, dieldrin, toxaphene, BHC or DDT should not be fed to animals. Methoxychlor may be used to control insects on beans intended to be used for forage.

Also, soybeans should not be harvested too soon after treatment with some insecticides. Check label directions for proper waiting periods before harvest. Whether soybeans are intended for forage or seed production will largely determine what insecticides may be used safely and what waiting periods are necessary.

Fall armyworm. A little over naturalr size.

# These Are Some Pests That Damage Soybeans

## Recommended measures for their control

*(Staff Written)*

FOLLOWING are some pests that damage soybeans, states where reported, and control measures recommended by extension entomologists. In use of insecticides, it is important that manufacturers' recommendations on the label be followed closely.

**3-cornered alfalfa hopper.** La., Ark. Feeds on soybeans but not always in large enough numbers to warrant control. Girdles the stems near the ground so the stalks fall over. In most seasons heavy infestations in Arkansas come so late in the season that damage to soybeans is negligible.

The alfalfa hopper is green or brown, wedge-shaped and ¼-inch long. Nymphs are shaped similar to the adult and are brown in color.

Louisiana recommends DDT at 2 pounds per acre, or malathion at ¾ pound per acre.

**Bean leaf beetle.** Mo., Iowa, Ill., Ind., Ark., La., Miss., Md., Del., N. C., S. C., S. Dak.

One of the most destructive pests, particularly in Southern States. Feeds on both leaves and pods. Chews "shot-holes" in leaves.

Damage may appear from seedling stage on. The bean leaf beetle is favored by dry weather but can withstand a variety of conditions. Is generally abundant in Mississippi during the summer.

Adults usually have four red or brown spots on wings and may be pale yellowish buff to dull red in color, about 1/5 inch in length. Larvae are slender and white, and feed on the roots.

Spray when defoliation becomes severe or when pods are attacked. On seedling plants, damage can be stopped cold by spraying over the row.

Recommended insecticides include toxaphene, dieldrin, cryolite, DDT, and methoxychlor.

**Blister beetle.** Mo., Ind., Ark., La., Miss., Md., N. C., S. C., N. Dak., S. Dak.

A serious pest at times. Feeds as larva on grasshopper eggs, so infestations are closely related to grasshopper numbers.

Feed in swarms and cause considerable foliage loss in spots. Difficult to control because of migratory habits, but damage can be controlled by spot spraying if noticed soon enough.

Looks somewhat like a lightning bug.

Recommended insecticides are dieldrin, toxaphene, DDT, malathion, and aldrin.

**Clover root curculio.** Iowa, Ill., Md., Mo.

Migrates from newly plowed alfalfa or clover fields to marginal rows of soybeans, or may injure soybean seedlings planted after clover sod.

Adults are gray to light-brown blunt-nosed beetles about 1/6-inch long. Closely resemble sweet clover weevil. Play dead at slightest disturbance. Feed mainly at night and are seldom found on the plants during day.

Iowa recommends ½ lb. aldrin or ½ lb. heptachlor in planter furrow

### Safe and Dangerous Insecticides

University of Arkansas extension service lists insecticides as dangerous, medium, and relatively safe, as follows:

**Relatively safe.** DDT, ethion, malathion, toxaphene, and methoxychlor are safe to handle with ordinary precautions.

**Medium.** Aldrin, dieldrin, and heptachlor are more hazardous but can be safely used with the precautions set forth on the labels. Illnesses have been known to occur following their use. They may accumulate in the body and cause ill effects later. Care should be taken in handling these insecticides, particularly liquid concentrates. Unnecessary exposure should be avoided since they can enter the body through breathing, eating and skin contact. Protective clothing should be worn. Hands should be washed thoroughly before food is handled. After spraying or dusting operations, the operator should bathe and change clothes.

**Dangerous.** Endrin and parathion can be used safely but extreme caution should be used in handling these products. Follow the precautions described on the label.

where beans follow alfalfa or clover. Illinois, 1½ lbs. DDT per acre on marginal rows.

**Corn earworm.** Mo., Ark., Miss., Va., Md., N. C., S. C.

A very destructive pest in many states. The worms chew holes in the soybean pods and eat the newly formed beans. They start with the extremely small pods and damage is often not noticed at this stage.

The attacks of corn earworms usually come in July and August. After other hosts such as corn in silking stage are not available, moths deposit eggs on the terminals of soybean plant. The young hatch out and begin to feed on the terminals. They move down the plant until the larger worms are feeding on the pods. There is seldom any injury to soybean plants that mature their pods by the end of the first week in September.

The caterpillars grow up to 1½ inches in length. They vary in color from light green to almost black. Larvae are light on the underside and stripes, some light and some dark, run lengthwise of body.

Insecticides will control corn earworm when worms are small. Large worms are difficult to control. Recommended insecticides include toxaphene, methoxychlor, endrin, and DDT.

**Lesser cornstalk borer.** N. C., S. C.

Feeds on soybean stems, tunneling them out. Many injured plants do not die but wind may blow them over.

Larvae are slender caterpillars ¾-inch long, greenish in color with faint stripes and prominent bands of brown.

Early planting is valuable in control, and good growing conditions aid the plant in recovering from attacks.

Insecticides have shown some promise but are not recommended by South Carolina entomologists. North Carolina recommends 10% DDT dust applied directly to base of stems at a rate of 10 to 15 lbs. per acre.

**Cucumber beetle** (spotted and banded). Ark., Del., N. C., S. C.

Sometimes partially defoliates soybeans in certain areas. Control measures are not generally necessary in Arkansas.

South Carolina recommends 10% or 20% toxaphene dust; North Carolina, 5% DDT dust 10 to 15 lbs. per acre or equivalent amount of spray.

**Cutworm.** Iowa, Ind., Ark., La.

There are many kinds of cutworms, both surface and underground feeders, and a few that climb plants and feed on the foliage.

Iowa recommends ½ lb. aldrin or ½ lb. heptachlor per acre applied in planter row.

**Fall armyworm.** Ark., Miss., Del., Va., N. C., S. C., S. Dak.

Sometimes appears in large numbers in July and August and defoliates soybeans. Has been observed to feed on pods in the same manner as the corn earworm. Grassy fields may be more heavily infested.

Armyworm is a term generally applied to any caterpillar that appears in hordes. Fall armyworm larvae look something like corn earworm but are more greasy in appearance. There is a prominent inverted yellow Y on the front of the head.

The fall armyworm can often be controlled by border treatment.

Recommended insecticides include DDT and toxaphene. Virginia recommends a combination of the two for control of fall armyworm and other worms which may be present.

**Flea beetle.** Ill.

Appears in May or June and usually attacks plants in seedling stages. Treat when needed.

Recommendations include 1½ lb. DDT, ¼ lb. dieldrin, or 1½ lb. toxaphene per acre on the foliage.

**Grape colaspis.** Mo., Iowa, Ill., Ind., Ark., N. C.

The larvae feed in roots or the

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## These Publications Are Available

Some publications you might write for:

Soybean Insects and Their Control, by W. C. Nettles. Circular 450. Clemson Agricultural College Extension Service, Clemson, S. C.

1960 Insect Control Recommendations for Missouri. University of Missouri, College of Agriculture Extension Service, Columbia, Mo.

1960 Condensed Insecticide Recommendations for Field Crop and Livestock Insects, by H. B. Petty and Steve Moore III. University of Illinois, College of Agriculture Extension Service, Urbana, Ill.

Diseases and Insects of Soybeans, by Harlan E. Smith and Gordon Barnes. Leaflet No. 193. College of Agriculture, Fayetteville, Ark.

Revised Recommendations for the Control of Corn Earworms and/or Fall Armyworms in Soybeans. MS-120. Agricultural Extension Service, Virginia Polytechnic Institute, Blacksburg, Va.

Field and Forage Crop Insect Control, by Walter M. Kulash and Wm. Campbell. Leaflet No. 45. North Carolina Agricultural Extension Service, State College Station, Raleigh, N. C.

underground stem of plant, and may greatly reduce the stand. The adults may cause some defoliation. May be a serious pest on soybeans following spring plowed lespedeza or clover field. Indiana recommends fall plowing for control.

Adult is a tan, elliptical beetle, about 1/6-inch long, covered with rows of evenly spaced punctures. Grub resembles a comma, is white and has a brown head. When full grown, it usually has a fat body, 1/8-inch to 1/6-inch long, with noticeably short legs.

For larvae control, Missouri recommends as a soil insecticide in areas where stands have been greatly reduced 1½ lbs. aldrin or heptachlor per acre disked into the top 3 to 5 inches of soil immediately following application, then replanting soybeans. Iowa recommends ½ lb. aldrin or ½ lb. heptachlor per acre applied in the planter furrow.

For adult control, North Carolina recommends 5% DDT dust 10 to 15 lbs. per acre applied to foliage, or the equivalent amount of spray.

**Grasshopper.** Mo., Iowa, Ill., Ind., Ark., Miss., Del., N. C., N. Dak., S. Dak.

Undoubtedly the No. 1 pest in all parts of the soybean belt and the only one to do much damage to soybeans in some areas.

Entomologists recommend spraying of borders when migrations from adjoining crops begin. Missouri entomologists note control is much easier and less expensive if done early. It takes less insecticide to control young hoppers and much less area needs to be covered.

Recommended insecticides include dieldrin, aldrin, toxaphene or heptachlor. At temperatures of 95° F. or above, control with dieldrin or toxaphene will be considerably better than with aldrin.

**Green cloverworm.** Mo., Ill., Ark., Miss., Va., Md., Del., N. C., S. C.

Also known as soybean worm. Have seriously injured soybeans but still not generally considered a major problem. Common in most soybean fields in Mississippi. They are relatively slow feeders and will not destroy a crop overnight.

The worms feed on the bean leaves, beginning at the top of plant and working down, which gives the plants a ragged appearance. Have not been found feeding on the pods.

A semi-looper, pale green with two lighter stripes down each side. They fall to the ground at the slightest disturbance, and when touched wiggle violently. Adults are brown and black moths.

Recommended insecticides include toxaphene, dieldrin and DDT. Illinois entomologists say treatment is justified only when there are six or more worms per foot of row.

**Japanese beetle.** Iowa, Ind., Del., N. C., Ga.

Adults are fond of soybeans but are not yet considered a major pest in most places.

Less than ½ inch in length. Fore part of the body is metallic green, wings are bronze, and there are white spots at the tail end.

Recommended insecticides include DDT and methoxychlor.

**Mexican bean beetle.** Iowa, Del., N. C., S. C., Ga., Miss.

One of the most destructive pests in North Carolina. Very serious in the Elizabeth City, N. C., area where commercial crops of beans are often grown alongside soybean fields.

In this situation it is suggested that a two-crop system of potatoes, green beans, or perhaps cabbage with soybeans might be followed.

Adults first appear on the bean plants in April and May in South Carolina when yellowish eggs are laid in large clusters on the leaves.

The larvae and adults feed on the underside of bean plants and leave only the lacelike structure of the leaf veins. Control is difficult because feeding takes place on the undersurface of the leaf.

The Mexican bean beetle is a lady beetle having 16 black spots on yellow-brown wing covers. Larvae are spiny yellow grubs.

Recommended insecticides include parathion, cryolite, methoxychlor, or malathion.

**Potato leafhopper.** Ill., Iowa, Ind., Del.

A tiny, yellowish-green wedge-shaped insect. Infested fields take on a yellow color.

Indiana recommends methoxychlor at 2 pounds per acre to control the insect.

**Seed corn maggot.** Ill., Iowa, Ind., Del.

Tiny maggots that hollow out and destroy germinating seeds. Worst where germination is slow, the seed poor, the weather cold, seed planted deep or where quantities of vegetation are plowed under in the spring.

Iowa recommends ½ lb. aldrin or ½ lb. heptachlor per acre applied at planting time in the furrow.

Indiana recommends seed treatment, using 1 oz. lindane, dieldrin or heptachlor per bushel of seed.

**Spider mite** (strawberry or two-spotted). Ill., Mo., Md., Del., Miss.

Mites may move to soybeans from weeds on field borders. When infestations become heavy, leaves will start discoloring, and will eventually dry and drop. Damage may be compared with the effects of dry weather, but it will develop on plants well supplied with moisture.

Recommended insecticides include ethion, malathion, sulfur dust and parathion.

**Stinkbug.** Ark., La., S. C., Miss., Mo.

Stinkbugs have damaged soybeans some places, particularly in the Midsouth in the fall of 1959. By sucking soybean pods they cause some reduction in the quality of the seed and lower yield somewhat. Small black or brown spots caused by punctures in the developing beans are considered objectionable where soybeans are used for food, even though nutritional quality is not lowered significantly.

Entomologists have no recommendations for control as yet. Mississippi State University recently set up a new project to study the effect of the various stinkbugs on soybeans in the Delta area of Mississippi.

**Thrips.** Miss., Iowa, Md., N. C.

Infest plants from the seedling stage on, making silvery marks on the leaves and killing the leaves from the bottom upward.

Maryland entomologists recommend control measures as soon as the pest can be located. A thorough application is necessary using drop nozzles to cover the bottom of the leaves as well as the tops. Treat the whole field at the same time and

apply when the temperature is below 85° F.

Recommended insecticides are DDT, malathion, or toxaphene.

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Moths do not overwinter in soybean states but fly in from farther south. Moths are dusty flecked with brown and have an oblique dark line across the lower and upper wings. Caterpillars are greenish in color and generally striped though highly variable. They are wrigglers.

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**Webworm** (garden and alfalfa). Mo., Ill., Ark., N. Dak.

Often attack soybeans, which may be defoliated when infestations are heavy. Weedy fields are especially vulnerable. In spots where they are feeding plant terminals will be covered with webs and most of the foliage destroyed.

Garden and alfalfa webworms are about 1-inch long and green to yellow-green with three black spots on the side of each body segment.

Treat affected spots when damage appears and small worms are numerous.

Recommended insecticides are toxaphene, dieldrin and DDT.

**White-fringed beetle.** Ga.

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Iowa recommends applying ½ lb. of aldrin or ½ lb. heptachlor per acre in the planter furrow.

Illinois recommends 3 lbs. aldrin or 3 lbs. heptachlor per acre as soil treatment, applied 2 weeks before planting. A smaller dosage will not kill large grubs. Disk in immediately.


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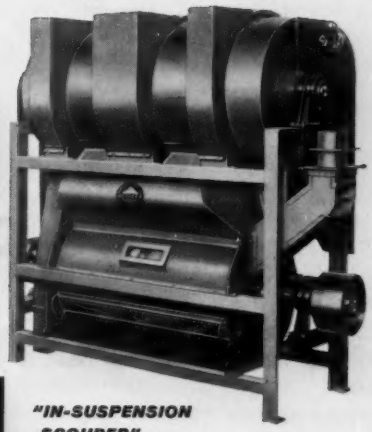

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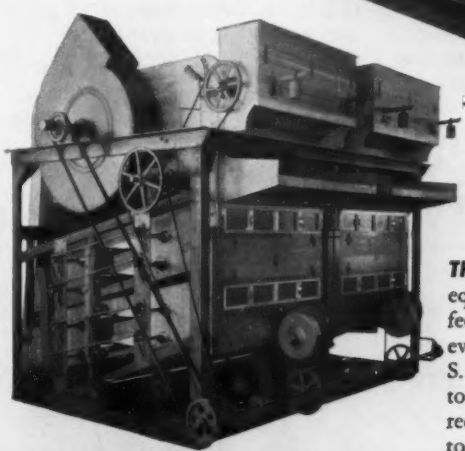

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## These Publications Are Available

Some publications you might write for:

Soybean Insects and Their Control, by W. C. Nettles. Circular 450. Clemson Agricultural College Extension Service, Clemson, S. C.

1960 Insect Control Recommendations for Missouri. University of Missouri, College of Agriculture Extension Service, Columbia, Mo.

1960 Condensed Insecticide Recommendations for Field Crop and Livestock Insects, by H. B. Petty and Steve Moore III. University of Illinois, College of Agriculture Extension Service, Urbana, Ill.

Diseases and Insects of Soybeans, by Harlan E. Smith and Gordon Barnes. Leaflet No. 193. College of Agriculture, Fayetteville, Ark.

Revised Recommendations for the Control of Corn Earworms and/or Fall Armyworms in Soybeans. MS-120. Agricultural Extension Service, Virginia Polytechnic Institute, Blacksburg, Va.

Field and Forage Crop Insect Control, by Walter M. Kulash and Wm. Campbell. Leaflet No. 45. North Carolina Agricultural Extension Service, State College Station, Raleigh, N. C.

underground stem of plant, and may greatly reduce the stand. The adults may cause some defoliation. May be a serious pest on soybeans following spring plowed lespedeza or clover field. Indiana recommends fall plowing for control.

Adult is a tan, elliptical beetle, about 1/6-inch long, covered with rows of evenly spaced punctures. Grub resembles a comma, is white and has a brown head. When full grown, it usually has a fat body, 1/8-inch to 1/6-inch long, with noticeably short legs.

For larvae control, Missouri recommends as a soil insecticide in areas where stands have been greatly reduced 1½ lbs. aldrin or heptachlor per acre disked into the top 3 to 5 inches of soil immediately following application, then replanting soybeans. Iowa recommends ½ lb. aldrin or ½ lb. heptachlor per acre applied in the planter furrow.

For adult control, North Carolina recommends 5% DDT dust 10 to 15 lbs. per acre applied to foliage, or the equivalent amount of spray.

**Grasshopper.** Mo., Iowa, Ill., Ind., Ark., Miss., Del., N. C., N. Dak., S. Dak.

Undoubtedly the No. 1 pest in all parts of the soybean belt and the only one to do much damage to soybeans in some areas.

Entomologists recommend spraying of borders when migrations from adjoining crops begin. Missouri entomologists note control is much easier and less expensive if done early. It takes less insecticide to control young hoppers and much less area needs to be covered.

Recommended insecticides include dieldrin, aldrin, toxaphene or heptachlor. At temperatures of 95° F. or above, control with dieldrin or toxaphene will be considerably better than with aldrin.

**Green cloverworm.** Mo., Ill., Ark., Miss., Va., Md., Del., N. C., S. C.

Also known as soybean worm. Have seriously injured soybeans but still not generally considered a major problem. Common in most soybean fields in Mississippi. They are relatively slow feeders and will not destroy a crop overnight.

The worms feed on the bean leaves, beginning at the top of plant and working down, which gives the plants a ragged appearance. Have not been found feeding on the pods.

A semi-looper, pale green with two lighter stripes down each side. They fall to the ground at the slightest disturbance, and when touched wiggle violently. Adults are brown and black moths.

Recommended insecticides include toxaphene, dieldrin and DDT. Illinois entomologists say treatment is justified only when there are six or more worms per foot of row.

**Japanese beetle.** Iowa, Ind., Del., N. C., Ga.

Adults are fond of soybeans but are not yet considered a major pest in most places.

Less than ½ inch in length. Fore part of the body is metallic green, wings are bronze, and there are white spots at the tail end.

Recommended insecticides include DDT and methoxychlor.

**Mexican bean beetle.** Iowa, Del., N. C., S. C., Ga., Miss.

One of the most destructive pests in North Carolina. Very serious in the Elizabeth City, N. C., area where commercial crops of beans are often grown alongside soybean fields.

In this situation it is suggested that a two-crop system of potatoes, green beans, or perhaps cabbage with soybeans might be followed.

Adults first appear on the bean plants in April and May in South Carolina when yellowish eggs are laid in large clusters on the leaves.

The larvae and adults feed on the underside of bean plants and leave only the lacelike structure of the leaf veins. Control is difficult because feeding takes place on the undersurface of the leaf.

The Mexican bean beetle is a lady beetle having 16 black spots on yellow-brown wing covers. Larvae are spiny yellow grubs.

Recommended insecticides include parathion, cryolite, methoxychlor, or malathion.

**Potato leafhopper.** Ill., Iowa, Ind., Del.

A tiny, yellowish-green wedge-shaped insect. Infested fields take on a yellow color.

Indiana recommends methoxychlor at 2 pounds per acre to control the insect.

**Seed corn maggot.** Ill., Iowa, Ind., Del.

Tiny maggots that hollow out and destroy germinating seeds. Worst where germination is slow, the seed poor, the weather cold, seed planted deep or where quantities of vegetation are plowed under in the spring.

Iowa recommends ½ lb. aldrin or ½ lb. heptachlor per acre applied at planting time in the furrow.

Indiana recommends seed treatment, using 1 oz. lindane, dieldrin or heptachlor per bushel of seed.

**Spider mite** (strawberry or two-spotted). Ill., Mo., Md., Del., Miss.

Mites may move to soybeans from weeds on field borders. When infestations become heavy, leaves will start discoloring, and will eventually dry and drop. Damage may be compared with the effects of dry weather, but it will develop on plants well supplied with moisture.

Recommended insecticides include ethion, malathion, sulfur dust and parathion.

**Stinkbug.** Ark., La., S. C., Miss., Mo.

Stinkbugs have damaged soybeans some places, particularly in the Mid-south in the fall of 1959. By sucking soybean pods they cause some reduction in the quality of the seed and lower yield somewhat. Small black or brown spots caused by punctures in the developing beans are considered objectionable where soybeans are used for food, even though nutritional quality is not lowered significantly.

Entomologists have no recommendations for control as yet. Mississippi State University recently set up a new project to study the effect of the various stinkbugs on soybeans in the Delta area of Mississippi.

**Thrips.** Miss., Iowa, Md., N. C.

Infest plants from the seedling stage on, making silvery marks on the leaves and killing the leaves from the bottom upward.

Maryland entomologists recommend control measures as soon as the pest can be located. A thorough application is necessary using drop nozzles to cover the bottom of the leaves as well as the tops. Treat the whole field at the same time and

apply when the temperature is below 85° F.

Recommended insecticides are DDT, malathion, or toxaphene.

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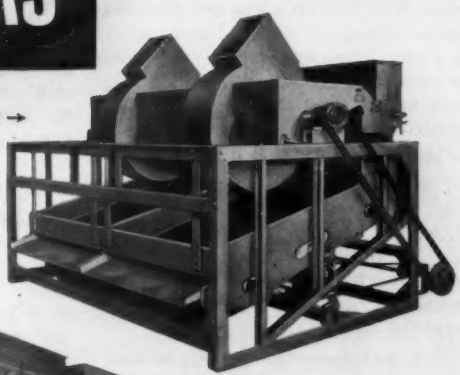

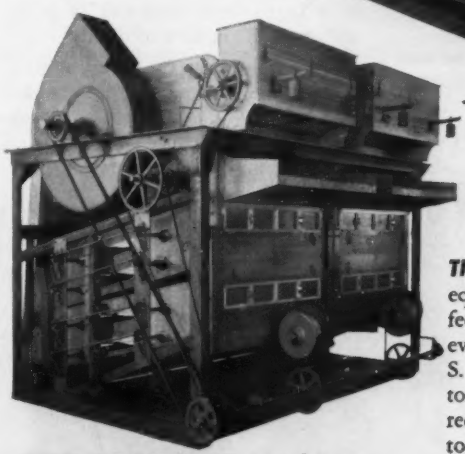

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# Uses of Soybean Oil

85% of the oil in margarine is soybean oil.

By ALMON T. MACE

Chief, Program Analysis Branch, Oils and Peanut Division, Commodity Stabilization Service, U. S. Department of Agriculture

TODAY, the U. S. soybean crop contributes 85% of the oil consumed in margarine, 51% of the oil consumed in shortening, and 47% of the oil consumed in salad and cooking oils. It also contributes an important part of the oil used in paint and varnish and in many other industrial products.

More than a third of the 45 pounds of separated fat consumed annually per person in the United States is from the soybean. Roughly half of the 4.5 billion pounds of fats and oils exported as oil and oilseeds is either in the form of soybeans or soybean oil.

Table 1 shows the growth of the soybean and the soybean oil production and use since 1911.

World War II cut off import supplies of coconut and peanut oil as well as the imports of other oils. Meanwhile, food requirements rose as the nation attempted to feed its armed forces and its civilian population while at the same time providing food supplies for its allies. As domestic supplies of soybean oil increased in response to wartime programs, allocation orders on fats and oils were applied which forced the use of soybean oil in order to spread the short supplies of other oils.

One of the results was an increased use of soybean oil in margarine which in turn increased to satisfy demands not met by the limited butter supply. Increased use of soybean oil in shortening and in salad and cooking oils also resulted.

Since the war, the consumption has continued to increase although the per capita disappearance has been relatively steady since 1950.

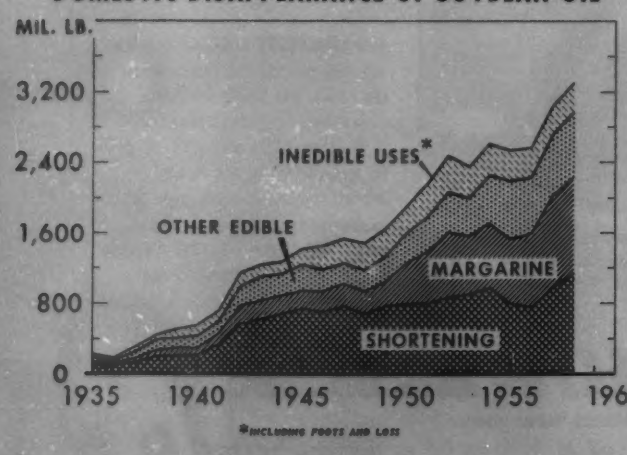
## Source of Many Products

Today, products containing soybean oil range from mayonnaise to waterproof cement. Federal, state, industry and industrial research organizations are occupied in the quest for additional uses.

Soybean oil is used primarily in products such as margarine, shortening, salad and cooking oils and salad dressings, and in a long list of technical items, most important of which are enamels and paints.

A byproduct of soybean oil is lecithin. Lecithin is used as an emulsifier in making various edible and industrial items and certain medicinal products. On the edible side are chocolate coatings and confections. In the technical field are such things as insecticides, and rubber products. The medicinal products appear in pharmaceuticals.

Fatty acids derived from the proc-



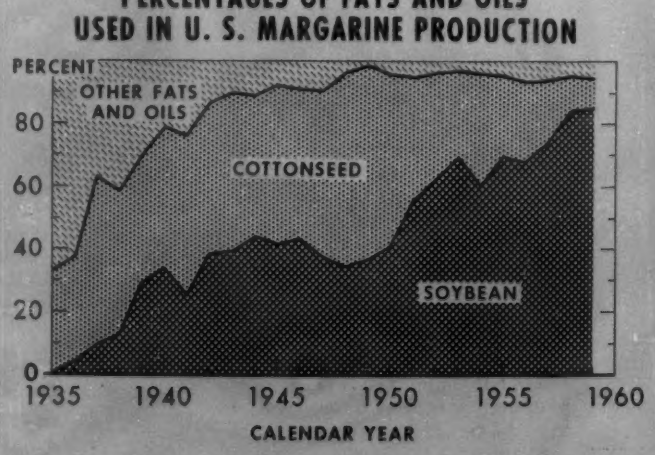



**TABLE 1. PRODUCTION OF SOYBEANS AND SUPPLY AND DISPOSITION OF SOYBEAN OIL**

| Year beginning October | Production | | Domestic utilization of oil [1] | | | Imports oil | Exports oil [3] |
|---|---|---|---|---|---|---|---|
| | Soybeans | Oil | Edible | Inedible [2] | Total | | |
| | million bushels | | million pounds | | | | |
| 1911-1914 | — | — | 10 | 8 | 18 | 18 | — |
| 1915-1919 | — | — | 99 | 92 | 191 | 206 | 12 |
| 1920-1924 | 1 | 1 | 12 | 11 | 23 | 21 | 2 |
| 1925-1929 | 7 | 6 | 7 | 8 | 15 | 17 | 5 |
| 1930-1934 | 17 | 42 | 27 | 21 | 48 | 5 | 3 |
| 1935-1939 | 56 | 324 | 276 | 56 | 332 | 8 | 48 |
| 1940-1944 | 151 | 1,009 | 849 | 131 | 979 | 1 | 53 |
| 1945-1949 | 209 | 1,645 | 1,238 | 268 | 1,505 | [4] | 259 |
| 1950 | 299 | 2,454 | 1,599 | 308 | 1,907 | — | 762 |
| 1951 | 284 | 2,444 | 1,786 | 364 | 2,150 | [4] | 438 |
| 1952 | 299 | 2,535 | 2,077 | 386 | 2,463 | [4] | 413 |
| 1953 | 269 | 2,350 | 2,002 | 324 | 2,326 | — | 507 |
| 1954 | 341 | 2,711 | 2,264 | 344 | 2,608 | — | 716 |
| 1955 | 374 | 3,143 | 2,196 | 344 | 2,539 | — | 1,297 |
| 1956 | 449 | 3,431 | 2,227 | 337 | 2,565 | — | 1,744 |
| 1957 | 484 | 3,800 | 2,726 | 325 | 3,051 | — | 1,743 |
| 1958 | 580 | 4,251 | 2,973 | 330 | 3,304 | — | 2,139 |
| 1959 | 538 | | | | | | |

[1] Calendar year succeeding the beginning of crop year. 1947-50, year beginning October. [2] Includes foots and loss. [3] Includes oil equivalent of soybeans. [4] Less than 500,000 pounds. Oils and Peanut Division, CSS, Program Analysis Branch.

essing of soybean oil are used in four main forms: as fractionated saturated acid in products like metallic soaps, shaving compounds, and alkyd resins; as fractionated unsaturated fatty acids in emulsifiers; as whole fatty acids in greases; and as hydrogenated fatty acids in items like carbon paper, stamping inks, and dictaphone records.

Glycerine is another product derived from soybean oil. In past years glycerine from vegetable oils and animal fats has been important in the production of explosives. In recent years it has been replaced largely by synthetic glycerine made from petroleum oils.

## Grew Up With Margarine

Soybean oil and margarine in the United States have grown together in large measure. Freed of some of the legislative restrictions — both federal and state—which earlier held back its market development, margarine now uses a billion pounds of soybean oil annually. In 1930, margarine production was only one-fifth the size it is today. Then it was made largely from coconut oil and from oleo oil derived primarily from tallow. Changes in the percentage use of soybean oil in margarine are shown in the Chart.

European countries historically prefer other fats and oils above soybean oil in the manufacture of margarine but the continued large supply of soybean oil in recent years at favorable prices in competition with other fats provides a strong economic incentive to use more soybean oil.

## A Lot of Shortening

The shortening industry has passed through many changes in the last 50 years. The advent of finely textured shortenings and the introduction of liquid shortening (cooking oils) has brought about the increased utilization of vegetable oils. Perfections of refining, deodorizing, hydrogenation and bleaching processes for both cottonseed and soybean oil have made these oils attractive as ingredients of shortening products. Total use in 1958 for shortenings was 1,137 million pounds. This exceeded the cottonseed oil used in shortenings by a wide margin and was equal to more than half the amount of lard used as lard plus that used in shortenings.

## Dresses Up Salads

A third important use of soybean oil is for salad dressings. The growth of the green vegetable industry, the decrease in importance of home produced foods, the wide publicity given to the nutritive value of green salads and the continued popularity of snacks and sandwich lunches have provided a basis for a growing market for vegetable oil products.

In the earlier years of its growing use for food, certain quality problems of soybean oil made it relatively undesirable for use in salad oils and dressings. Now modern processing methods make it possible to eliminate these characteristics. In 1958 soybean oil was more than two-thirds of the total oil used by 135 major companies in the production of mayonnaise and salad dressing.

## Paints, Floors, Walls

Inedible uses of soybean oil increased rapidly until a few years after World War II. The use of soybean oil in paints and varnishes has been steady at about 165 million pounds for the last 2 years. As the synthetic products used in paints have been developed and increased in acceptance, vegetable oil uses have declined. Thus far, however, the decline in soybean oil has been less than that for linseed oil.

## World Wants Oil

Increases in the use of soybean oil in the three broad edible categories of margarine, shortening, and salad dressings and salad oils, as is shown graphically in the Chart, gives evidence of the domestic growth that has occurred in this new industry. Throughout the world the increase in soybean oil production over pre-World-War-II levels has been larger than the increase of any other fat or oil product.

The growth of the soybean product markets during the 1950's rests on three broad economic forces. The first of these is the increased demand for oil resulting from expanding populations and the demand for higher levels of consumption.

A second factor has been the growing demand for protein meal.

The third factor has been the relatively favorable price-cost relationship for both the farmer and the processor. The export market for soybean oil has been aided by sizable U. S. foreign aid programs, particularly the sales for foreign currency under P. L. 480.

In all of this development, the soybean products—meal and oil—have moved into the United States and foreign markets at prices which enable them to compete effectively with other products.

## Still It Grows

In the foreign field, vegetable oil products such as cottonseed oil, peanut oil, coconut oil, as well as rapeseed and sunflower oil have recovered from the low production of the war period and show some increases over pre-war levels. One-third of the increase in world vegetable oil supplies during the 1950's, however, has come from American soybeans.

The world demand for fats and oils is far from satisfied. For the world as a whole outside the United States, consumption per capita (edible and inedible) is about 25 pounds. This compares with a total fats and oils consumption of 69 pounds per person in the United States.

In a few of the industrial countries of northwestern Europe, fats and oils consumption is near the U. S. level but generally throughout Europe it lags behind. In some of the great areas of population, consumption is under 10 pounds. Conceivably, in the years ahead, the soybean may become one of the major sources of increased food fats.

# Nutrena Buys Staley Feed Business

NUTRENA MILLS, INC., of Minneapolis, and the A. E. Staley Manufacturing Co. of Decatur, Ill., have jointly announced the sale of Staley's formula feed business to Nutrena, effective May 31.

According to a statement by Nutrena President James C. North and Staley Soybean Division Manager E. E. Rhodes, Nutrena will immediately begin to serve the hundreds of Staley farm feed dealers and distributors in Illinois, Indiana, Michigan, Ohio, Wisconsin and Iowa.

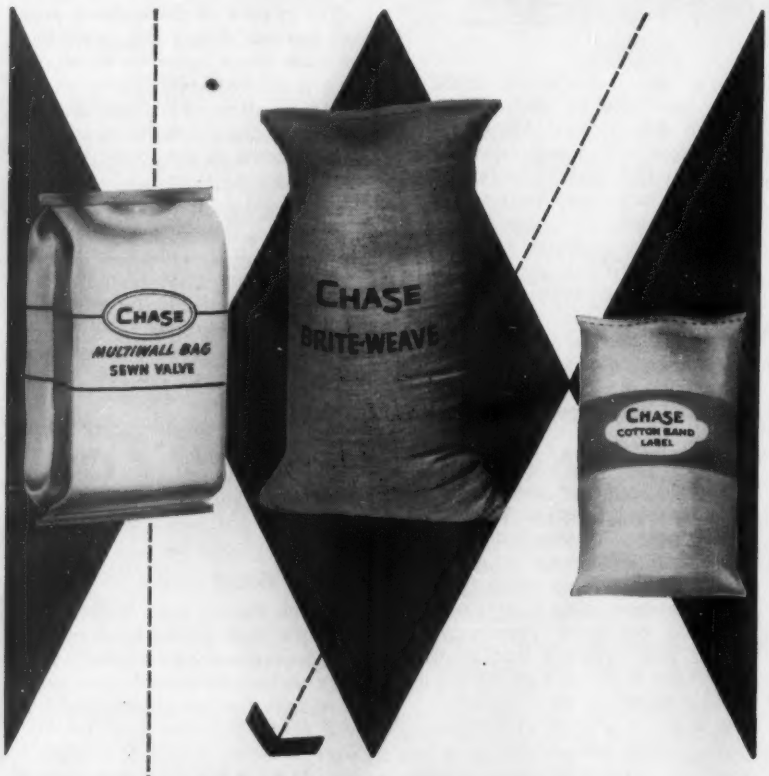
Supplies of feed concentrates and complete formulas will come initially from Staley plants at Decatur and Riverdale, Ill., and subsequently from two or more of Nutrena's 15 mills.

Included in the transfer are feed formulas, inventory, accounts receivable, feeding contracts, warehouse leases and service equipment. No real estate is included in the sale.

Nutrena plans to absorb much of the Staley formula feed sales organization, North said, and assignments of personnel are being worked out individually.

Changing patterns in the farm feed business and the trend to larger, integrated operations, coupled with Staley's rapidly expanding research and development program for other corn, soybean, chemical and grocery products, led to the Staley Company's decision to center its attention on these lines.

Staley's continues production and distribution of soybean meals among the company's more than 600 corn, soybean and chemical products.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## West German Imports of U. S. Beans Set Record

THE UNITED STATES supplied 36% or 223,100 metric tons of West Germany's total 1959 imports of 628,900 metric tons of edible vegetable oils and oilseeds in terms of oil, reports USDA's Foreign Agricultural Service.

Soybeans are West Germany's most important agricultural import from the United States, and West Germany is the most important market for U. S. soybeans in Western Europe.

In calendar year 1959, West Germany's imports of U. S. soybeans increased one-fourth, rising to 674,623 tons from 536,638 in 1958. However, total German soybean imports in 1959 rose 46% to 903,283 metric tons, compared with 616,665 tons in 1958. The U. S. share of the total fell from 87% in 1958 to 75% in 1959. In 1957, when the Japanese market was open to Mainland China's soybeans, the United States supplied nearly all of West Germany's soybean imports. German imports of Chinese soybeans nearly tripled in 1959, rising to 225,765 metric tons from 78,702 the previous year.

Shipments of U. S. soybean oil to West Germany in 1959 spiraled to 7,505 metric tons from only 1,892 in 1958 but were still well below the 11,729 tons in 1957.

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George W. Selleck, Saskatoon, Saskatchewan, Canada, has joined Monsanto Chemical Co., St. Louis, as a project manager in the agricultural chemicals section of the organic chemicals division. His responsibilities concern the development and commercialization of pesticides.

SOYBEAN COUNCIL OF AMERICA, INC.

# Dr. Hayward Joins Council Staff

J. W. HAYWARD, 61, Minneapolis, world-renowned authority on nutritional and biological aspects of soybeans, has been named director of nutrition for the Soybean Council of America, Inc., it was announced at Minneapolis by Howard L. Roach of Waterloo, Iowa, Council president.

Dr. Hayward is being loaned to the Council by Archer-Daniels-Midland Co., where he has been director of nutrition for the past 25 years. He will aid in promotion of the sale and use of soybeans and soybean products in this country and some 40 foreign nations.

He is establishing an office for the Soybean Council of America in room 304, Baker Building, Minneapolis 2.

J. W. Hayward

Mr. Roach said Dr. Hayward's appointment was prompted by a new market development program of SCA and the Foreign Agricultural Service of the U. S. Department of Agriculture. According to terms of the first commodity contract negotiated last January, government funds will be used to develop foreign markets for soybeans and soybean products.

Considered a major break-through for the industry, the agreement designates more than 40 countries for market development work, utilizing foreign currencies acquired by the USDA.

Dr. Hayward has been a member of the Soybean Research Council of the National Soybean Processors Association since 1937, serving as chairman from 1937 to 1942. He was chairman of the Soy Food Research Council from 1943 to 1947 and chairman of that group's research from 1950 to 1952. He is author of many scientific and popular articles as well as product bulletins on edible soy flour, soybean meal and other oilseed products. He also has written numerous articles pertaining to foods and nutrition of man and animals.

Dr. Hayward was director of the Notre Dame University School of Agriculture (1924-1932) and did research at the University of Wisconsin before joining Archer-Daniels-Midland in 1935.

He and his associates at ADM are credited with developing procedures for controlled processing of soybean meal and soy flour for maximum protein efficiency and optimum functional properties. In his investigations from 1932 to 1937 he disclosed the need for proper processing of soybean meal so it has top nutritional value for livestock and poultry feeds.

Mr. Roach said one of Dr. Hayward's chief responsibilities will be to disseminate knowledge on improved nutrition. He will meet with key persons throughout the world to point out the exceptional values of soybean oil, soy flour and soy meal in human and animal diets. He has traveled extensively in Latin America and Europe during the past 5 years.

## Four Soybean Trucks Now Touring Spain

FOUR U. S. DEPARTMENT of Agriculture trucks featuring soybeans and soybean products that made the most important fairs in Italy last year are now touring Spain.

In Spain the exhibit is a joint enterprise with the Spanish Extension Service that supplies technical personnel and publications. Pamphlets on the advantages of soybean meal printed by the Spanish Ministry of Agriculture are distributed free to interested farmers. The office of the Soybean Council in Spain is also distributing a large number of copies of its magazine, Nutricion.

The mobile exhibit will be at Santander, July 4-10, at the time of the third week of the seminar on animal nutrition organized by the Council. The exhibit will also be at La Coruna when General Franco is there, so he can visit it.

## Plans Made for London, Munich Council Exhibits

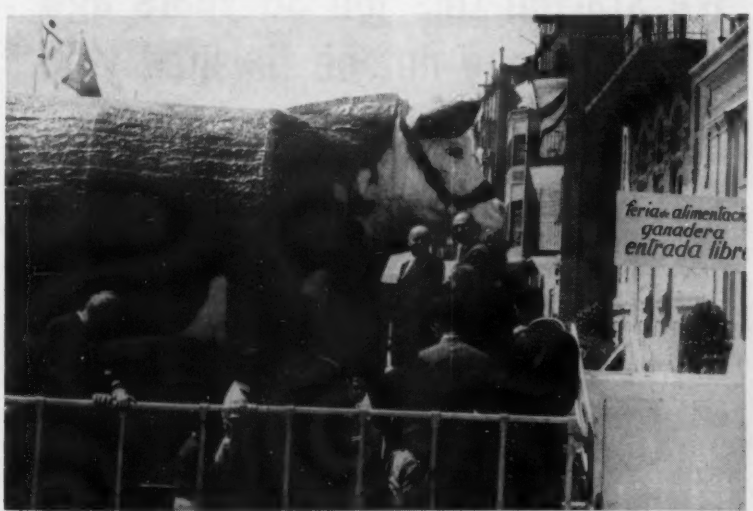
PLANS ARE well under way for a Soybean Council exhibit at the British Food Fair in London Sept. 1 to 17 and the International Exhibition of Groceries and Fine Foods at Munich, Germany, Sept. 23 to Oct. 2.

J. W. Hayward, recently appointed director of nutrition for the Council, will be in attendance at both fairs.

Sonja Soya will demonstrate the various uses of soy products, with a cooking demonstration which will be the central attraction at both exhibits. Jose Muentefering of the Council's Rome office will also help.

Soya leaflets and recipe books will be given to interested visitors. A standup reception for about 60 to 70 people is planned for each site. The menu will include fried chicken prepared with a soy flour batter and fried in soybean oil, soy bread and other delicacies prepared from soybean products.

The exhibits are sponsored jointly by Foreign Agricultural Service, USDA, with the Council.




FARMERS queue up to see the steer, part of the mobile exhibit, at Lerida.

JAPANESE-AMERICAN SOYBEAN INSTITUTE

# University Girls Show Soy Uses

By SHIZUKA HAYASHI

Managing Director, Japanese American Soybean Institute, Nikkatsu International Bldg., No. 1-Chome Yurakucho Chiyoda-Ku, Tokyo, Japan

THERE WERE various exhibits at the annual festival of the Japan Girls University, Mejiro, Tokyo, which was held 2 days recently.

One of the most attractive and educational displays, on the various phases of soybeans, was put up by the students of the senior class of foods and nutrition in the School of Home Economics.

Two large classrooms were assigned to the displays on protein and fat, under the title of "Your Eating Habits." One room was exclusively for soy protein and the other for fats and oils. The studies pursued by the students had been concentrated on the improvement of the diet through the usage of soybean protein. Their studies were almost perfectly displayed in the various panels and charts covering all walls and partitions. Some of the students who had prepared the material were present to give explanations to the visitors.

The panels which seemed to have most appeal for the crowds were those with the titles: "Let's reconsider our eating habits;" "What did you eat this morning?" "How high should our nutritional requirements be?" "What kind of food must we eat to obtain adequate nutrition?" "Do we fail to apply our nutritional knowledge to our diets?"

The panels explained that we have to consider foods from two viewpoints: (1) economics and (2) nutrition. It is necessary to consider which food has the highest nutritional value with the lowest cost.

The panels emphasized the necessity of utilizing soy protein. The studies on soybeans covered such information as supply and demand of soybeans and the various soybean products, fortification of foods with soy flour, and utilization of soybeans.

The crowds were led to the last panel which offered the conclusion: "Our studies reveal that soybeans are rich in protein. Japanese eating habits omit foods that do not supply a sufficient quantity of tryptophan and lysine. Soybeans add these. From a nutritional point of view they equal fish and meat. Moreover, they are available at low cost the year around.

"Japan's population will exceed 100 million in the near future. Under present circumstances it is extremely difficult to find new sources of high quality protein. Thus, the significance of soybeans and especially their defatted protein should be highly rated."

The importance of the exhibit was the fact that the senior students took the initiative and pursued the studies. They confidently focused on the value of soybeans as the most ideal source of food to improve present dietary habits. The publicity carried out by the Japanese American Soybean Institute through the use of educational literature helped lead to the decision made by these students to pursue studies on the use of soybeans in nutrition. Shortly before the festival was held the students visited the office of the Japanese American Soybean Institute seeking information.

Approximately 18,000 people including students, their parents and other visitors attended the festival and went through the displays.

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PUBLICATIONS

# Tall Oil Competes with Soybean Oil

TALL OIL — a byproduct of the paper-making industry — is giving linseed and soybean oils stiff competition in industrial markets.

Tall oil is used in a wide range of products. Its main uses are as a raw material in products like soaps and lubricants, and as a drying oil in the manufacture of products like paints, printing inks, and floor tile. It will probably become an increasingly important source of rosin and fatty acid.

Output of tall oil has more than doubled since 1954. In 1959 production reached a record 800 million pounds, compared with an average of less than 50 million pounds a year before World War II.

While the use of tall oil has been expanding, competitive vegetable oil consumption has been declining. The consumption of linseed oil has shown a sharp downtrend. The nonfood uses of soybean oil declined from a peak of 388 million pounds in 1952 to 325 million pounds in 1959.

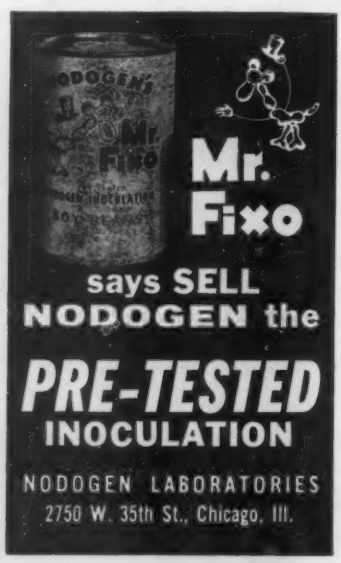
The decline in the consumption of linseed and soybean oils is due mainly to reduced utilization by the drying oils industries. Paint output has been on the uptrend, but the use of fats and oils in their manufacture has not shared in the increase because of the continuing shift to low fat and nonfat content material.

A number of factors account for the sharp increase in the use of tall oil. Its price has been low and stable in relation to the drying oils. The quality of the oil has been upgraded by continuing research. Researchers also have found new uses for the oil. Then, too, tall oil has been readily available during periods of vegetable oil scarcity.

Prices of tall oil during the past 10 years varied 1.1¢ per pound, from 2¢ to 3.1¢. Linseed oil prices varied 6¢ per pound, from about 13¢ to 19¢, while soybean oil fluctuated nearly 8¢ per pound, between 9¢ and 17¢.

*Tall Oil—More Competition for Linseed and Soybean Oils.* By George W. Kromer. Agricultural Situation. Agricultural Marketing Service. U. S. Department of Agriculture, Washington 25, D. C.

See also *Tall Oil Output Expanding Rapidly.* By George W. Kromer. Fats and Oils Situation, January 1960. Agricultural Marketing Service, U. S. Department of Agriculture, Washington 25, D. C.




## Salad and Cooking Oils Gaining in Consumption

SALAD AND cooking oils have been gaining in consumption at the expense of table spreads and cooking fats during the past 30 years. Margarine has been gaining at the expense of butter, and soybean oil at the expense of cottonseed oil.

There has been little change in the per capita use of all food fats —a gain of 1.2 pounds in 30 years.

*Substitution Highlights—the Food Fat and Oil Picture.* By George W. Kromer. Agricultural Situation, April 1960. Agricultural Marketing Service, U. S. Department of Agriculture, Washington 25, D. C.

## Fertilizers Aid Yields In Ohio Experiments

IN OHIO experiments the yield of soybeans was increased by the application of fertilizer nitrogen in 3 out of 4 years at Wooster, and in 2 out of 3 years at Hoytville. But in six of seven experiments the application of nitrogen to soybeans did not produce yields that were profitable at current price levels.

*Response of Soybeans to Plow-Down and Side-Dress Applications of Nitrogen on Irrigated and Non-Irrigated Soils.* By H. J. Mederski, J. H. Wilson, and G. W. Volk. Research Circular 59. Ohio Agricultural Experiment Station, Wooster, Ohio.

# Educational Films Offered By Association

*The Soybean Story.* Produced by Allis-Chalmers Mfg. Co., with the cooperation of the late W. L. Burlison, department of agronomy, University of Illinois. A 25-minute, 16-mm. sound film tells the story of soybean production, harvesting and usage with special emphasis on the commercial possibilities of the crop. You are taken to Midwest farms where soybeans are produced as well as to modern research laboratories where new uses for soy products are devised.

*Tomorrow's Foodpower.* A 27-minute color-film story about animal agriculture and the high protein foods it provides for us all. The film, presented by Central Soya Co., Inc., is narrated by NBC news commentator Chet Huntley and records the progress of our dynamic animal agriculture . . . a system of meat, milk and egg production and distribution that has resulted in a standard of living and made the United States an economic stronghold among nations of the world. The film also presents the challenge that faces animal agriculture for the future. If we are to feed our 1975 population at the per capita consumption we enjoy today, we must increase production about 30%. Freedom and Tomorrow's Foodpower are inseparable . . . one is not possible without the other. . . . An excellent film for all age groups.

*Soybeans—The Feature Story.* Prepared by National Soybean Crop Improvement Council. A 25-minute, 16-mm. sound and color film. The audience is taken on a tour of the soybean industry by a reporter who is sent out to get a feature story on soybeans. The film tells a well-balanced story about soybeans with the emphasis on the proper steps for soybean production. This film puts over its point without preaching and is good entertainment as well as suitable for classroom work.

These films may all be booked for showing by contacting the American Soybean Association, Hudson, Iowa.

# It takes 100-year men* to build 100 plants

Setting the pace in the diversified fats and oils industry is no small job. Yet through Blaw-Knox teamwork with progressive clients, new processes have been developed, new equipment designed, and over 100 plants erected.

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*Chemical Plants Division*

**BLAW-KNOX**

*Combined years of experience of project leaders pictured below.

**George Karnofsky**
Staff associate for the Vice President of Development and Research. Came to Blaw-Knox in 1943... helped evolve a program in solvent extraction. Invented and holds patents on the Rotocel Extractor. Participated in laboratory research on the properties of oil seeds. Reported findings in a short course of the American Oil Chemists. Contributed to vapor desolventizer-deodorizer process for producing high protein soluble meal.

**Reno J. White**
Assistant Section Manager, Fats & Oils Department. Coming to Blaw-Knox in 1946, he has held the position of project engineer and senior process engineer. Assignments varied from relatively small process units to large, complete plant installations —including site development, all operations of construction and initial startup. He has made significant contributions to several Blaw-Knox processes for upgrading all types of fats and oils.

**Armin R. Jensen**
Technical Service Engineer, joined Blaw-Knox in 1943. Engaged in laboratory research for five years—exploring solvent extraction problems, and developing the Rotocel Extractor. Supervised initial operation of many solvent extraction plants, including one in Japan. Worked on the first basket type extractor and the centrifuge type extractor. He has served as a field engineer on process equipment, piping installations, and testing.

**Hal B. Coats**
Ph. D., Section Manager in charge of plants and processes for the fats and oils industry; staff associate in the Blaw-Knox research and development office. Joined Blaw-Knox in 1943. Plant experience includes: solvent extraction, continuous fat splitting, fatty acid distillation, deodorizing units, and hydrogenation. Directed research laboratory working on processing procedures. Designed, built and operated bench and semi-pilot scale equipment.

# GRITS and FLAKES . . . *from the World of Soy*

## William Folk Joins Weitz-Hettelsater

**Weitz-Hettelsater Engineers,** Des Moines, Iowa, recently announced the appointment of William C. Folk as executive vice president of the firm's Kansas City office. He will serve as administrative head of the engineering and design activities of that branch, which specializes in engineering and construction of complete facilities for the grain, feed, flour and allied industries.

William C. Folk

Before joining the Weitz-Hettelsater organization, Mr. Folk served as executive engineer for General Mills, where he administered the engineering assignments for all operating divisions.

Weitz-Hettelsater Engineers was formed in December 1959 as a division of the Weitz Co., Inc. It represents the combination of the Jones-Hettelsater Construction Co., engineers and designers of bulk storage and processing plants, and the Weitz Co., builders of industrial, commercial, and institutional facilities since 1855.

## Signal Oil Changes Eastern States Name

Signal Oil and Gas Co. has changed the name of its **Eastern States Petroleum and Chemical Co.** division to Houston division, it was announced by Samuel B. Mosher, chairman of the board.

Signal's Houston division was formerly Eastern States Petroleum & Chemical Corp., which merged with Signal in September 1959.

R. N. Blaize, who was president of the former Eastern States firm, will continue to head the Houston division as a vice president and director of Signal.

## Central Soya Builds Chattanooga Storage

**Central Soya Co., Inc., Fort** Wayne, Ind., has announced plans to build a new-type storage unit at its Chattanooga plant. The new building will be a single unit, 2-million-bushel bulk storage facility for handling soybeans.

The storage unit will be 300 feet in diameter with dike wall sides, and a galvanized cone-shaped roof. An overhead belt conveyor will deliver soybeans to the unit, which contains a tunnel discharge at the bottom for removal of soybeans. Temperature detection equipment will be installed in the new facility.

Construction was scheduled to start in early May and take about 5 months.

Jerry Neeland has been appointed to the sales staff at the Memphis plant of the **R. J. Brown Co.,** effective immediately. Mr. Neeland has been taking a training course with Ashland Oil & Refining Co., parent company of R. J. Brown.

Wayne D. Nusbaum, manager of the **Ralston Purina Co.** plant at Fort Worth, Tex., has been named treasurer of the company, effective Aug. 1. He will succeed Ray Siler, who is retiring Sept. 30.

Harry A. Scott, director of sales for **Ralston Purina's** international division, has announced his retirement, effective Apr. 30, following nearly 37 years with the company.

Lindsay Tennent has joined the sales force of **Dabney-Hoover Supply Co.,** Memphis, Tenn., and will make his headquarters in Columbus, Miss., and travel in that area. He was formerly employed in Osecola, Ark.

Appointment of Lance A. Wise as assistant public relations director of the **A. E. Staley Manufacturing Co.,** Decatur, Ill., and editor of the Staley Journal, was announced by John N. DeBoice, Staley public relations director. Mr. Wise comes to Staley's from the Weirton Steel Co., Weirton, W. Va., where he was editor of the Weirton Employees Bulletin.

George D. MacLean, vice president and general traffic manager of **Central Soya Co.,** retired effective June 3. He joined Central Soya in 1938 as general traffic manager and was named a vice president in 1942.

Dempster Products Co., Beatrice, Nebr., has announced the appointment of Lee B. Dimon as general manager of **Habco Manufacturing Co.,** Columbus, Nebr., subsidiary which manufactures grain drying and irrigation equipment. He replaces C. A. Olson who will devote more time to the parent firm.

The promotion of Royle L. Sprunger to the position of general rail traffic manager, effective June 3, has been announced by **Central Soya Co., Inc.,** Fort Wayne, Ind. He has been assistant general traffic manager.

Elmer R. Kiehl, professor of agricultural economics, has been appointed dean of the **University of Missouri College of Agriculture** effective Sept. 1. He will succeed John H. Longwell who will retire.

The promotion of George Albright to the position of feed mill superintendent at the Memphis, Tenn., plant has been announced by **McMillen Feed Mills.** He joined the company in Memphis in 1949.

Ralph F. Crim, 78, former extension agronomist of the **University of Minnesota,** died Apr. 28. He was born in Ohio, educated at the University of Ohio and came to Minnesota about 1915. He was a high school instructor and county agent before he became extension agronomist about 1920. Mr. Crim served as secretary of the Minnesota Crop Improvement Association for many years.

G. B. "Gerry" Holdhusen has joined **Butler Manufacturing Co.** as a farm equipment sales representative. Mr. Holdhusen, who will make his home in Mobridge, S. Dak., will service Butler accounts in South Dakota.

E. G. Hotchkiss, manager of the **Ralston Purina** plant in Kansas City, Mo., since 1952, has been named western division production manager for the company, headquartering in the general offices in St. Louis. W. T. Chafee, western division production manager for the past 9 years, returns to Purina's Denver, Colo., plant as manager. J. H. Tully, manager of Purina's Lafayette, Ind., plant, moves to Kansas City as manager there. S. L. Niebur, manager of the Checkerboard Grain Co., Minneapolis, transfers to Lafayette as manager.

Directors and officers of the **A. E. Staley Manufacturing Co.,** Decatur, Ill., were reelected in annual meetings of the stockholders and the board of directors. Officers reelected: A. E. Staley, Jr., chairman of the board; E. K. Scheiter, president; R. L. Rollins, D. E. Nordlund, L. S. Roehm, and T. L. Gresham, vice presidents; W. R. Boyer, treasurer and assistant secretary; R. C. Scherer, secretary and assistant treasurer; C. V. Glynn, comptroller; and Henry M. Staley, assistant treasurer. Reelected assistant secretaries were C. W. Schultz, Jr., Kenneth J. Maltas, James W. Moore, and Edward C. Lane.

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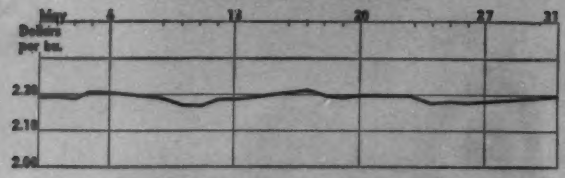
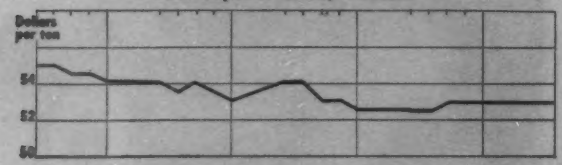
## DAILY MARKET PRICES

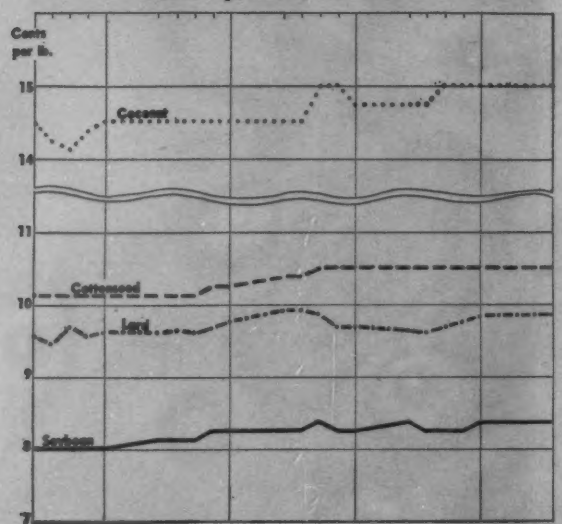
### No. 1 Cash Soybeans, Chicago




### Bulk Soybean Meal, Decatur

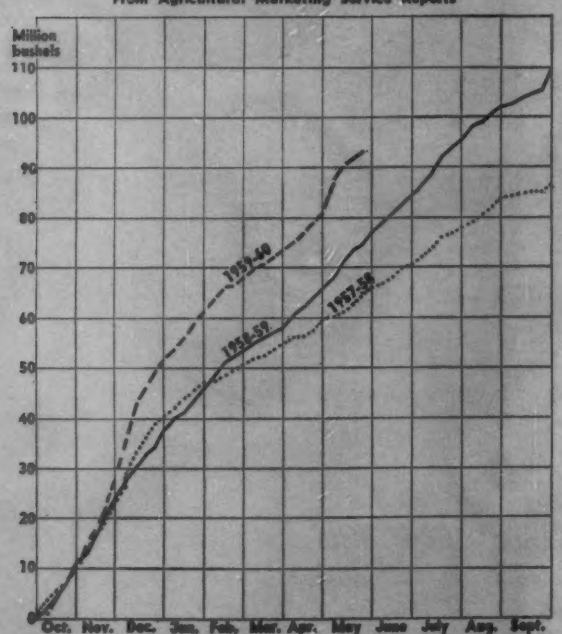



### Crude Vegetable Oils and Lard



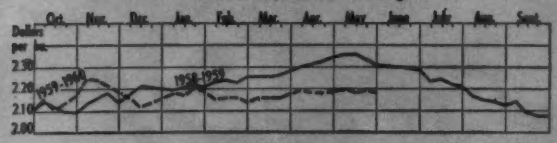

### SOYBEAN INSPECTIONS FOR EXPORT, CUMULATIVE YEAR BEGINNING OCT. 1, 1957, 1958, 1959

From Agricultural Marketing Service Reports

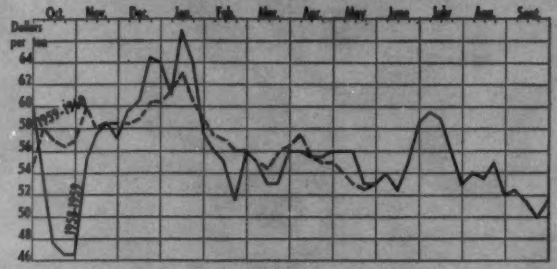



## TRENDS AT A GLANCE (Weekly Close)

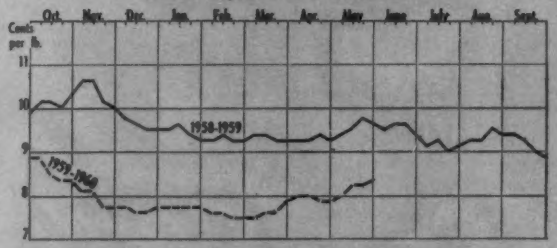
### No. 1 Cash Soybeans, Chicago




### Bulk Soybean Meal, Decatur




### Crude Soybean Oil, Tankcars




### CASH PRICES MAY 1960*

| May | No. 1 yellow soybeans Chicago | Bulk soybean meal Decatur | Soybean oil Decatur | Cottonseed oil Mississippi Valley | Coconut oil Pacific Coast | Lard Chicago |
|---|---|---|---|---|---|---|
| 2 | $2.19½ | $55.00 | $.08 | $.10⅛ | $.14½ | $.0955 |
| 3 | 2.19¾ | 55.00 | .08 | .10⅛ | .14¼ | .0947 |
| 4 | 2.19¼ | 54.50 | .08 | .10⅛ | .14⅛ | .0967 |
| 5 | 2.20 | 54.50 | .08 | .10⅛ | .14⅜ | .0957 |
| 6 | 2.20 | 54.00 | .08 | .10⅛ | .14½ | .0960 |
| 7 | Saturday | | | | | |
| 9 | 2.18½ | 54.00 | .08⅛ | .10⅛ | .14½ | .0960 |
| 10 | 2.17 | 53.50 | .08⅛ | .10⅛ | .14½ | .0962 |
| 11 | 2.17 | 54.00 | .08⅛ | .10⅛ | .14½ | .0960 |
| 12 | 2.18¼ | 53.50 | .08¼ | .10¼ | .14½ | .0965 |
| 13 | 2.18¼ | 53.00 | .08¼ | .10¼ | .14½ | .0975 |
| 14 | Saturday | | | | | |
| 16 | 2.20 | 54.00 | .08¼ | .10⅜ | .14½ | .0990 |
| 17 | 2.20¼ | 54.00 | .08¼ | .10⅜ | .14½ | .0990 |
| 18 | 2.19½ | 53.00 | .08⅜ | .10½ | .15 | .0985 |
| 19 | 2.19 | 53.00 | .08¼ | .10½ | .15 | .0967 |
| 20 | 2.19¾ | 52.50 | .08¼ | .10½ | .14¾ | .0967 |
| 21 | Saturday | | | | | |
| 23 | 2.19 | 52.50 | .08⅜ | .10½ | .14¾ | .0962 |
| 24 | 2.17¾ | 52.50 | .08¼ | .10½ | .14¾ | .0960 |
| 25 | 2.18¼ | 53.00 | .08¼ | .10½ | .15 | .0970 |
| 26 | 2.18 | 53.00 | .08¼ | .10½ | .15 | .0975 |
| 27 | 2.18½ | 53.00 | .08⅜ | .10½ | .15 | .0982 |
| 28 | Saturday | | | | | |
| 30 | Memorial Day | | | | | |
| 31 | 2.19⅛ | 53.00 | .08⅜ | .10½ | .15 | .0982 |

* From Wall Street Journal, Chicago.

### 1958 AND 1959 SOYBEAN CROPS

| | 1959 | 1958 |
|---|---|---|
| Total soybeans remaining under price support as of Apr. 30 | 45,313,801 bu. | 124,412,000 bu. |
| Total soybeans withdrawn from support as of Apr. 30 | 8,034,372 bu. | 15,209,000 bu. |
| Soybeans crushed Oct. 1-Apr. 30 | 237,493,000 bu. | 242,682,000 bu. |
| Exported Oct. 1-Apr. 30 | 83,270,000 bu. | 70,187,000 bu. |
| Balance on hand May 1 for processing, export or carryover | 248,522,000 bu. | 259,927,000 bu. |
| Total soybeans inspected for overseas export plus lake shipments to Canada Oct. 1-May 20 | 93,222,786 bu. | 77,016,053 bu. |

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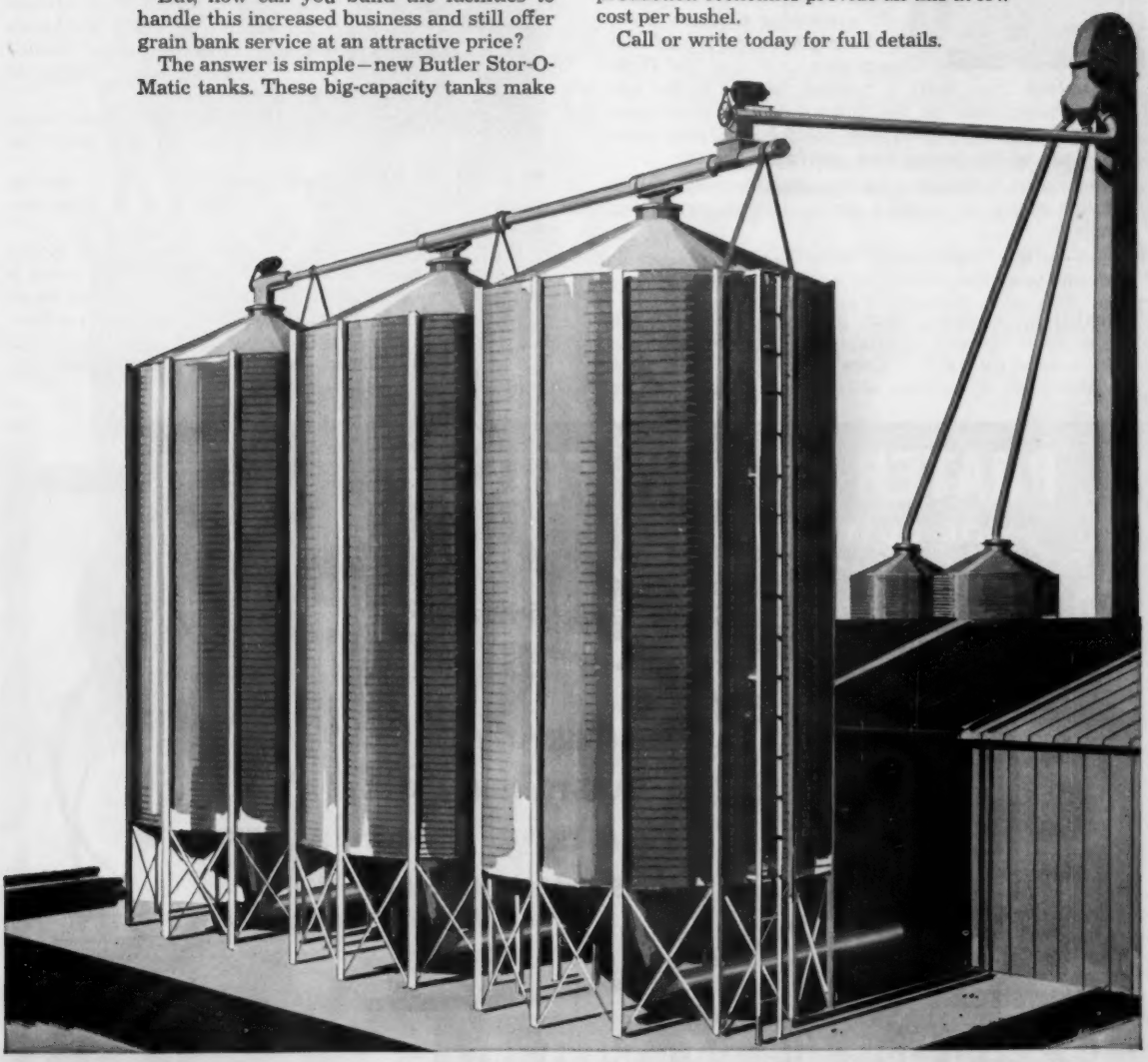

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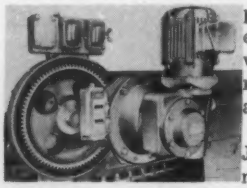
With Powr-Just, the manufacturer claims that sudden and excessive load conditions that develop can immediately be relieved, preventing the main worm drive motor from "kicking out," thus stopping the Expeller. It is also claimed that even under normal conditions with the Expeller running, any routine but precise adjustments are made with push-button ease.



In explaining this new Powr-Just equipment, Anderson engineers point out that the Powr-Just output drive shaft is coupled directly to the spur pinion countershaft on the choke operating mechanism, thus maintaining a sensitive control and mechanical advantage of the pinion and gear arrangement.

Powr-Just is optional on new Expellers and can be installed easily on existing machines with only minor changes.

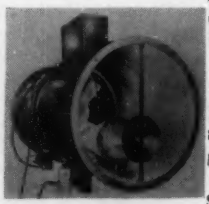
For further information write Soybean Digest 6a, Hudson, Iowa.

**COMBINE.** A new 7-foot pull-type combine, with bigger grain bin and adjustable axle for row crop use, is announced by the J. I. Case Co. for 1960. Known as the Model 80, it includes all the field-proved features of the former Model 77, plus improvements.

The new 32-bushel grain bin not only increases the Model 80 capacity, but also improves its stability and overall appearance with a new low silhouette. A fast discharge auger unloads the bin in a little over a minute.

For further information write Soybean Digest 6d, Hudson, Iowa.

**DRIER.** Lennox Industries, Inc., announces a new grain drier recently added to its line. This new supplemental heat unit uses LPG fuel, operates on a 220-volt current for the fan and has 110-volt control circuit.



Equipped with either a 21-inch or 24-inch fan, the GBIO is a handy and economical source of heated air for multiple-layer drying of grain in storage bins.

For further information, write Soybean Digest 6c, Hudson, Iowa.

**TEMPERATURE PROBE.** A new low-priced reading temperature probe has been announced by Burrows Equipment Co.

The probe operates by means of a thermister, giving an instant reading from 20° to 150° F. No long cable is necessary since the probe is internally wired. The meter is suspended from a neck strap, and is powered by Mercury batteries lasting up to 5 years.

For further information write Soybean Digest 6b, Hudson, Iowa.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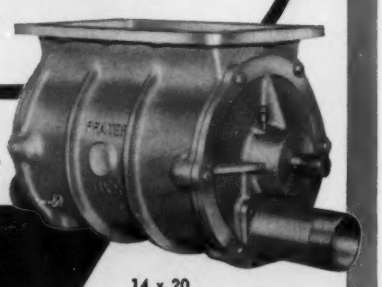

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This unit is designed to process all types of oil seeds. Write for the money-saving details contained in Bulletin No. 08-30A. Our engineering staff will gladly make suggestions on solving your extraction problems.

Now in operation at Southern Soya, Inc., Estill, South Carolina, a French Stationary Basket Extractor permits complete filtration of miscella as part of the extraction process. Filling action is continuous, and flake-beds are pre-soaked during filling to produce highest, most profitable extraction yield.

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## WASHINGTON DIGEST

# USDA Sees 40 Million Bu. Carryover

BAD WEATHER in Europe and the possibility of purchases for donations abroad under the P. L. 480 program are two new factors brightening prospects for the already record year predicted for oil exports. Although both developments are only in the "iffy" stage, they will bear watching, say marketing analysts we have consulted.

Factor 1—Foreign Agricultural Service outposts report that dry weather has been threatening Europe. When this happens bean oil movement is facilitated. The dry spell has been only a mild one but is something to watch, according to officials.

Factor 2—Secretary of Agriculture Benson has agreed to consider the possibility of a purchase program for foreign donation purposes, depending on how the new crop begins to shape up. Soybean industry men made the proposal in a recent meeting with the Secretary to report evidence of a big crop ahead. Corn weather has been bad. If the weather stays the same, that means a switch to more soybean plantings. Again, we'll have to watch developments.

In USDA's latest report on the fats and oils situation, the Department sees nothing to dim already predicted high prospects. A minimum of last year's 1.3 billion pounds of cottonseed and soybean oil was expected to move in export through the coming September. There can be shifts in buying before then, of course, but that is what the statistical picture shows now. This estimate is raised to 1.4 billion pounds in the latest size-up and could go even higher.

### Purchase Program

If a purchase program for foreign donations is put into effect or dry weather continues in Europe, or both happen, this would up the prospect figures for bean oil exports.

The general movement of all food fats (including the oil equivalent of soybeans) is also regarded as a strong indicator of overseas demand. Through March the export of food fats was pushing 2 billion pounds, 31% greater than last year. The increase was attributable to larger shipments of soybeans, cottonseed and soybean oils, and lard. The total of all food fats for the entire marketing year is expected to reach 3.7 billion pounds compared to 3.3 billion a year earlier.

Note that the Secretary has only agreed to "consider" the foreign donation proposal. As the total situation is now viewed, it would take a crop of over 600 million bushels of beans to provide new impetus to purchase program proposals. As some analysts see it, a decision on the proposal is not likely in much less than 6 weeks.

In the meantime, USDA is holding more firmly than ever to its estimate of 400 million bushels for crushings and around 125 million bushels in exports for beans. Carryover should now add up to about as follows: 10 million bushels commercial, 30 million CCC, which includes 13 million bushels of 1958 crop under reseal. Total year-end stocks are 40 million bushels.

USDA's first official carryover estimate of bean oil stocks predicts 400 million pounds. This is up 102 million pounds over last year's carryover. A slight increase in cottonseed oil is also seen, 250 million pounds compared to last year's 203 million pounds.

The Soybean Digest mourns the passing of Porter M. Hedge, who has written Washington news for this magazine under the "Washington Digest" heading for the past 16 years. (See story on page 8.) Porter's column this month was prepared for us by the staff of Farm Reports, Inc., in Washington.

### Price Outlook

Soybean prices to farmers are reported in the latest USDA report on "Demand and Price" as "unusually stable during October-April 1959-60, averaging about $2 per bushel, about the same as last year and 15¢ above the national average support price . . . Soybean prices to farmers probably will continue firm through midsummer. Prices after that will be influenced by new-crop prospects. Crusher and export demand through the remainder of the current marketing year is expected to be as strong as last year but the supply of beans will be slightly less."

Bean oil prices should strengthen some as a result of declining supplies of cottonseed oil and lard, says the report. For the remainder of the marketing year, bean oil prices will continue relatively stable but still somewhat below the year-earlier level. Also adding strength to bean oil prices is the higher bean oil export prospects for the last half of the season.

Lard production has picked up some, including farm, to raise the forecast to 2,725 million pounds, about 1% more than last year. Production this summer is expected to drop about 15% under last summer based on the smaller slaughter expected. Total disappearance will continue higher, however, meaning lard prices will continue to edge upward.

Earlier speculation that CCC's sales price policy might be a big factor in bean prices is rendered nil for the time being as USDA sees it.

CCC says it will continue to sell under the present policy of a minimum 20¢ markup over support price, although no great demand is expected. One official added, "And we aren't making any money on it at that (meaning profit over the loan value)."

Oilseed meal feeding is expected to drop still more the remainder of the year, but may equal use of last year in the second half. Total ton-


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nage fed for the 1959-60 period would in this case fall below the 11.8 million tons fed in 1958-59 to total 11.6 million tons.

According to USDA's latest feed situation analysis, "Marked gains in exports and an increase in stocks from Oct. 1 to Apr. 1 accompanied the decrease in feeding of oil meals. Stocks on Apr. 1 totaled 284,000 tons, 34,000 tons above the 250,000 tons the previous year. The increase in stocks for the season through Apr. 1 was about the same as in 1958-59. Exports totaled 579,000 tons, almost twice the heavy exports in the first half of 1958-59 with soybean meal alone accounting for 412,000 tons.

Although supplies of soybean meal for feeding increased sharply to the record tonnage of nearly 9 million tons last season, the quantity fed through March this year was down 270,000 tons from the 4,551,000 tons fed during the same period the previous year.

The general fall-off in oilseed meal feeding is relatively slight, the figures show, but this is the first time in 5 years that the tonnage fed declined from the preceding year. Total tonnage fed annually for the past 6 years has increased nearly 40%.

## Mural Shows Ship Loading At Central Soya Elevator

**A MURAL showing the SS Weissenburg loading grain at Central Soya's elevator "A" on the Calumet River in Chicago is one of 11 photos featured in an exhibit being arranged for visitors to the Chicago Board of Trade. Here, Richard O. Westley, right, Central Soya vice president, grain merchandising, and Robert C. Liebenow, Chicago Board of Trade president, view the mural. The display is located along the fifth floor corridor of the Board of Trade Building. The SS Weissenburg was one of the first ocean-going ships through the St. Lawrence Seaway, following its official opening last year.**

## Denmark's Oilseed Imports Rise Sharply

DENMARK stepped up oilseed imports by over 40% in 1959 to satisfy the rising demand for vegetable oils and oilcakes, reports USDA's Foreign Agricultural Service. Imports of oil-bearing materials — including copra and palm kernels—rose to 364,454 metric tons from 255,659 metric tons in 1958.

Virtually all of this increase was in soybeans from the United States and Mainland China. Imports of U. S. soybeans jumped from 136,041 tons to 169,412 tons, while imports of Chinese soybeans spiraled from only 45,527 tons to 118,492 tons. The main reason given for the increase in imports from China was that prices for Chinese soybeans in many instances were lower than for beans from other sources.

Domestic production of oilseeds was up more than 50%, but still remained only around 5% of total supply. A slight expansion in area and higher yields per acre, despite last summer's drought, resulted in higher production of both rapeseed and mustard seed.

The ample supplies of oilseeds available during 1959 were primarily used for crushing.

Please mention the Soybean Digest when talking to our advertisers.

# — MARKET STREET —

**We invite the readers of THE SOYBEAN DIGEST to use MARKET STREET for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here. Rate 10c per word per issue. Minimum insertion $2.00.**

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FOR SALE—ANDERSON Expellers and French screw-presses, cookers, driers, 5-high, 48-inch crushing rolls, 36-inch attrition mills, sewing machines, hammermills, cracking rolls, filter presses. Ray L. Jones, 1923 Hayselton Drive, Jefferson City, Mo.

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STEEL GRAIN BINS—WE HAVE some 9,000 and 12,000 bu. King Size Bins plus a few other sizes available. Write for particulars. Midwest Steel Products Co., 121B Railway Exchange Bldg., Kansas City 6, Mo.

FOR SALE—SPECIAL PRICE ON 5,000 bushels of certified Ford soybean seed. Bert Benskin, Laurel, Iowa.

PLANT LIQUIDATIONS—FRENCH oil mill soybean plant, 35 ton daily capacity, Virden, Ill.—2 French screw presses, Type 2-S, 50 HP with 72-inch diameter integral five high cooker-driers, Big Chief Soybean hammermill—7½ HP motor, cooler, Viking pumps, Sperry 36-inch plate and frame filter press—3 Caterpillar Diesel generator sets, 220 V. AC, 94 KVA.
SOLVENT EXTRACTION PLANT, French type, 175 ton daily capacity, New York state, with towers, rotary driers, etc.
PROCESS MACHINERY DIVISION, Newman Tallow & Soap Machinery Co., 3601 S. Iron St., Chicago, Ill.

FREE CATALOG! BULK BINS, farm automation equipment, elevator legs, screw conveyors, auger elevators, mixers and cleaners. Write to: Burrows Equipment Co., 1316-D Sherman Ave., Evanston, Ill.

PRATER 75 H.P. DUAL SCREEN pulverizer. Also 100-lb. Richardson meal scale and Union Special 12-inch belt sewing machine. Ray L. Jones, 1923 Hayselton Drive Jefferson City, Mo.

GRAIN STORAGE TANK BARgain. Will sacrifice at 15¢ per bu. Steel must be moved for 200,000 bu. or more. Write Lee Smith, 1207 Commerce Trust Bldg., Kansas City, Mo.

FOR SALE—12½-TON TOLEDO dial suspension hopper scale, like new, 32-inch dial, model 2500. O. W. Meyer, Napoleon, Ohio.

# IN THE MARKETS

**EXPORTS.** Preliminary data on U. S. exports of soybeans and soybean products for March 1960, with comparable data for March 1959 and cumulative totals for October-March in the marketing years 1958-59 and 1959-60, from Foreign Agricultural Service, U. S. Department of Agriculture.

| | Unit | March 1959 | March 1960 | October-March 1958-59 | October-March 1959-60 |
|---|---|---|---|---|---|
| Soybeans | bu. | 5,022,788 | 7,168,153 | 60,776,651 | 75,770,062 |
| Soybean oil: | | | | | |
| Crude | lb. | 30,779,712 | 32,496,598 | 136,596,531 | 168,440,680 |
| Refined but not further processed | lb. | 3,178,976 | 4,530,955 | 17,434,602 | 30,775,227 |
| Refined, deodorized and hydrogenated | lb. | 15,402,184 | 15,304,112 | 160,575,095 | 57,434,331 |

**Cottonseed and soybean oils and lard: Exports under Title I, Public Law 480 programs, and total exports, October 1954-March 1960 (million lbs.)**

| | Oct. 1-Sept. 30 1954-55 | 1955-56 | 1956-57 | 1957-58 | 1958-59 | Oct. 1-Mar. 31 1958-59 | 1959-60 |
|---|---|---|---|---|---|---|---|
| Exports under P. L. 480: | | | | | | | |
| Cottonseed | 117 | 291 | 55 | 97 | 141 | 2 | 65 |
| Soybean | ..... | 279 | 495 | 592 | 747 | 281 | 100 |
| Total oils | 117 | 570 | 550 | 689 | 888 | 283 | [1]165 |
| Lard | ..... | 112 | 65 | 3 | ..... | ..... | ..... |
| Total exports: | | | | | | | |
| Cottonseed | 710 | 611 | 423 | 248 | 404 | 95 | [2]376 |
| Soybean | 50 | 557 | 807 | 803 | 941 | 319 | [2]284 |
| Total oils | 760 | 1,168 | 1,230 | 1,051 | 1,345 | 414 | 660 |
| Lard | 528 | 663 | 530 | 394 | 535 | 246 | [2]344 |

[1] P. L. 480 exports are reported according to the month in which the bill of lading was dated. [2] March exports estimated.

**Soybeans: U. S. exports by country of destination, October-March 1958-59 and 1959-60 (1,000 bu.)**

| | 1959-60 | 1958-59 |
|---|---|---|
| Canada | 7,160 | 5,720 |
| Mexico | ..... | 227 |
| Cuba | 518 | 18 |
| Sweden | 7 | ..... |
| Norway | 906 | 797 |
| Denmark | 5,008 | 2,993 |
| United Kingdom | 2,121 | 1,389 |
| Netherlands | 14,927 | 9,822 |
| Belgium and Luxembourg | 2,184 | 2,987 |
| France | 3,116 | 1,036 |
| West Germany | 8,137 | 9,312 |
| Switzerland | 428 | 337 |
| Italy | 1,904 | 748 |
| Israel | 4,258 | ..... |
| Korea | 724 | 496 |
| Japan | 22,330 | 19,090 |
| Spain | 53 | ..... |
| Taiwan (Formosa) | 1,083 | 1,745 |
| Nansei and Nanpo Islands | 1,111 | ..... |
| Other | 795 | 4,060 |
| Total | 75,770 | 60,777 |

Bureau of the Census.

**Active purchase authorizations under which purchases by foreign buyers had not been completed as of May 6, 1960 (metric tons)**

| Soybean and/or cottonseed oil | PA No. | Amount authorized | Contracting authorized through |
|---|---|---|---|
| Colombia | 25-30 | 12,600 | May 31, 1960 |
| Iceland | 40-42 | 400 | July 30, 1960 |
| Israel | 16-64 | 10,000 | May 31, 1960 |
| Peru | 13-16 | 4,100 | June 30, 1960 |
| Poland | 41-33 | 7,200 | June 30, 1960 |
| U.A.R. (Egypt) | 46-20 | 12,000 | July 30, 1960 |

Purchases of about 12,200 metric tons under the authorizations listed above have been reported. Programs Operations Division, Foreign Agricultural Service, U. S. Department of Agriculture, Washington 25, D. C.

**Title I, P. L. 480 Exports for July 1959-April 1960**

| | April 1960 Metric tons | Unit | Quantity | July 1959-April 1960 Metric tons | Unit | Quantity |
|---|---|---|---|---|---|---|
| Cottonseed oil | 1,499 | lb. | 3,305,000 | 62,960 | lb. | 138,802,000 |
| Soybean oil | 7,275 | lb. | 16,038,000 | 159,832 | lb. | 352,370,000 |

Operations division, Foreign Agricultural Service, U. S. Department of Agriculture.

**Soybeans: Inspections for export by ports and areas April 1960 (1,000 bu.)**

| Lake Ports | | Gulf | |
|---|---|---|---|
| Chicago | 893 | Mobile | 240 |
| Toledo | 1,037 | New Orleans | 3,921 |
| Subtotal | 1,930 | Port Allen | 456 |
| **Atlantic** | | Subtotal | 4,617 |
| Philadelphia | 142 | Totals | 7,458 |
| Baltimore | 503 | Jan.-Apr. 1960 | 31,202 |
| Norfolk | 266 | Jan.-Apr. 1959 | 30,891 |
| Subtotal | 911 | | |

Based on weekly reports of inspections for export by licensed inspectors and does not include rail and truck movement to Canada or Mexico. Agricultural Marketing Service.

**Soybeans: Inspections for export by coastal areas and country of destination, April 1960 (1,000 bu.)**

| Great Lakes | | | |
|---|---|---|---|
| Canada | 1,930 | Netherlands | 997 |
| Subtotal | 1,930 | West Germany | 112 |
| **Atlantic** | | Italy | 456 |
| Norway | 135 | Israel | 479 |
| United Kingdom | 168 | Korea | 146 |
| France | 235 | Taiwan (Formosa) | 352 |
| Taiwan (Formosa) | 96 | Japan | 1,946 |
| Japan | 138 | Other | 62 |
| Other | 139 | Subtotal | 4,617 |
| Subtotal | 911 | Grand total | 7,458 |
| **Gulf** | | Total Jan.-Apr. 1960 | 31,202 |
| Norway | 67 | Total Jan.-Apr. 1959 | 30,891 |

Based on weekly reports of inspections for export by licensed inspectors and does not include rail or truck movement to Canada or Mexico. In some cases, the ultimate destination of the soybeans exported is not shown on the inspection reports. Therefore, the quantity for each country may vary from official Census data which are based on custom declarations. Agricultural Marketing Service.

**PRICES.** Average prices for soybeans received by farmers, effective parity, and support rates, reported by Agricultural Marketing Service (dollars per bushel).

| Average farm price Apr. 15 1960 | Mar. 15 1960 | Apr. 15 1959 | Effective parity Apr. 15 1960 | Av. price as percent of parity Apr. 15 1960 | National average price support rate 1960 crop | 1959 crop | 1958 crop |
|---|---|---|---|---|---|---|---|
| 2.02 | 1.99 | 2.10 | 2.94 | 69 | 1.85 | 1.85 | 2.09 |

Average farm and parity prices from crop reporting board.

**Soybean prices compared with market value of soybean oil and meal**

| | Soybean oil: Average price at crushing plant Cts. per pound | Soybean oil: Value from bu. of soybeans[1] Dollars | Soybean meal: Bulk price at Decatur Dollars per ton | Soybean meal: Value from bu. of soybeans[1] Dollars | Value of oil and meal from bushel of soybeans[1] Dollars | Market price No. 1 yellow soybeans Ill. pts. Dollars per bu. | Spread between soybean price and value of oil and meal Cents |
|---|---|---|---|---|---|---|---|
| Apr. 1960 | 7.9 | 0.87 | 56.50 | 1.33 | 2.20 | 2.11 | 9 |
| Mar. 1960 | 7.7 | 0.85 | 55.85 | 1.31 | 2.16 | 2.08 | 8 |
| Feb. 1960 | 7.6 | 0.84 | 57.50 | 1.35 | 2.19 | 2.06 | 13 |
| Jan. 1960 | 7.7 | 0.85 | 61.50 | 1.45 | 2.30 | 2.11 | 19 |
| Dec. 1959 | 7.7 | 0.85 | 58.70 | 1.38 | 2.23 | 2.08 | 15 |
| Apr. 1959 | 9.2 | 1.01 | 55.90 | 1.31 | 2.32 | 2.20 | 12 |

[1] Based on assumption that a bushel of soybeans yields 11 pounds of oil and 47 pounds of meal. This table is for statistical comparison only. It does not reflect actual operating margins since prices are simple averages and do not take into account location differentials or actual purchases and sales of soybeans, soybean oil or soybean meal.

**PRICE SUPPORT.** Loan and purchase agreement totals, loan repayments and quantities of soybean delivered as of Apr. 30, 1960. From Agricultural Marketing Service, USDA (bushels).

| Warehouse and farm loans: Total under loan | Quantity repaid | Quantity delivered | Purchase agreements: Quantity under agreements | Quantity delivered |
|---|---|---|---|---|
| 45,313,801 | 8,034,372 | 2,103 | 7,055,963 | ..... |

Repayments on 1959-crop soybeans increased to 8,034,372 bushels through April compared to 3,591,554 bushels through March. Most of the repayments were in the following states: Ark. 672,879 bu.; Ill. 2,598,181 bu.; Ind. 459,434 bu.; Iowa, 1,242,071 bu.; Minn. 1,139,436 bu.; Miss. 486,287 bu.; and Mo. 745,795 bu.

**Cumulative report 1959-crop soybeans: Amount under price support by states through Apr. 30, 1960 (bushels)**

| | Quan. of loans repaid | Quan. delivered | Quantity of loans and purchase agreements outstanding: Warehouse | Farm | Purchase agreements | Total |
|---|---|---|---|---|---|---|
| Ala. | 21,622 | — | — | 11,475 | — | 11,475 |
| Ark. | 672,879 | — | 653,558 | 821,321 | 3,736,057 | 5,210,936 |
| Del. | — | — | — | 348 | 700 | 1,048 |
| Ga. | 15,872 | — | 1,132 | 8,849 | — | 9,981 |
| Ill. | 2,598,181 | 1,174 | 2,669,723 | 2,689,188 | 1,267,264 | 6,626,175 |
| Ind. | 459,434 | 124 | 275,597 | 1,099,506 | 106,328 | 1,481,431 |
| Iowa | 1,242,071 | 198 | 6,295,454 | 9,725,537 | 1,137,082 | 17,158,073 |
| Kans. | 123,289 | — | 141,825 | 437,696 | 21,934 | 601,455 |
| Ky. | 17,663 | — | 35,729 | 90,470 | 4,000 | 130,199 |
| La. | — | — | — | 26,731 | 4,000 | 30,731 |
| Mich. | 6,442 | — | 20,404 | 67,873 | 24,351 | 112,628 |
| Minn. | 1,139,436 | 507 | 2,483,434 | 3,357,393 | 367,211 | 6,208,038 |
| Miss. | 486,287 | — | 263,303 | 243,038 | 3,781 | 510,122 |
| Mo. | 745,795 | 100 | 1,621,031 | 1,709,247 | 124,037 | 3,454,315 |
| Nebr. | 45,683 | — | 61,240 | 273,306 | 55,945 | 390,491 |
| N. J. | — | — | — | 4,130 | — | 4,130 |
| N. Mex. | — | — | 576 | — | — | 576 |
| N. Y. | — | — | — | 789 | — | 789 |
| N. C. | 9,501 | — | — | 34,295 | 6,000 | 40,295 |
| N. Dak. | 90,633 | — | 42,692 | 278,260 | 105,498 | 426,450 |
| Ohio | 160,542 | — | 443,655 | 769,805 | 32,175 | 1,245,635 |
| Okla. | 14,342 | — | 62,524 | 30,341 | — | 92,865 |
| Pa. | 270 | — | 410 | 1,520 | — | 1,930 |
| S. C. | 91,752 | — | 88,488 | 94,900 | — | 183,388 |
| S. Dak. | 9,264 | — | 18,423 | 108,402 | 9,850 | 136,675 |
| Tenn. | 48,090 | — | 118,527 | 58,234 | 42,950 | 219,711 |
| Tex. | 29,227 | — | 3,835 | 5,662 | — | 9,497 |
| Va. | 3,982 | — | — | 12,110 | — | 12,110 |
| Wis. | 2,115 | — | 1,603 | 13,737 | 6,800 | 22,140 |
| Total | 8,304,372 | 2,103 | 15,303,163 | 21,974,163 | 7,055,963 | 44,333,289 |

**PROCESSING OPERATIONS.** Reported by Bureau of the Census for March and April 1960.

**Primary products except crude oil at crude oil mill locations: Production, shipments and transfers, and stock, April 1960-March 1960 (1,000 short tons)**

| | Production | | Shipments and transfers | | Stocks end of month | |
|---|---|---|---|---|---|---|
| | April 1960 | March 1960 | April 1960 | March 1960 | Apr. 30, 1960 | Mar. 31, 1960 |
| Soybean: | | | | | | |
| Cake and meal | 753.8 | *781.1 | 715.8 | *789.2 | 123.9 | 85.9 |
| Millfeed (hull meal) | 14.1 | 13.6 | 13.6 | 14.0 | 4.1 | 3.6 |

* Revised.

**Soybeans: Net receipts, crushings, and stocks at oil mills, by states, April 1960-March 1960 (1,000 short tons)**

| | Net receipts at mills[1] | | Crushed or used | | Stocks at mills | |
|---|---|---|---|---|---|---|
| | April 1960 | March 1960 | April 1960 | March 1960 | Apr. 30, 1960 | Mar. 31, 1960 |
| U. S. | 690.4 | *524.1 | 992.8 | *1,039.8 | 1,620.2 | *1,922.6 |
| Arkansas | 8.7 | 11.2 | 24.6 | 14.0 | 84.8 | 100.7 |
| Illinois | 302.5 | 185.2 | 308.4 | 315.9 | 307.9 | 313.8 |
| Indiana | [2] | [2] | [2] | 104.4 | [2] | [2] |
| Iowa | 72.0 | *128.3 | 158.9 | *166.0 | 248.0 | *335.0 |
| Minnesota | 66.5 | 49.4 | 74.5 | 87.4 | 77.2 | 85.2 |
| Mississippi | [2] | [2] | 32.1 | 37.0 | 74.3 | 110.4 |
| Missouri | [2] | [2] | [2] | [2] | [2] | [2] |
| Nebraska | [2] | [2] | [2] | [2] | [2] | [2] |
| No. Carolina | 2.6 | 4.0 | 13.5 | 14.4 | 58.3 | 69.2 |
| Ohio | 39.7 | 30.4 | 92.7 | 82.7 | 155.5 | 208.5 |
| Tennessee | 63.9 | 32.7 | 68.4 | 81.1 | 161.2 | 165.6 |
| All Oother | 134.5 | 82.9 | 219.7 | 136.9 | 453.0 | 534.2 |

* Revised. Note: Detail figures may not add to totals because of independent rounding. [1] Net receipts for each state are derived from the quantity of beans crushed and net change in stocks. [2] Included in "All other" to avoid disclosure of figures for individual companies.

**Soybean products: Production and stocks at oil mill locations, by states, April 1960-March 1960**

| | Crude oil (millions of pounds) Production | | Crude oil (millions of pounds) Stocks | | Cake and meal (thousands of tons)[1] Production | | Cake and meal (thousands of tons)[1] Stocks | |
|---|---|---|---|---|---|---|---|---|
| | April 1960 | March 1960 | Apr. 30, 1960 | Mar. 31, 1960 | April 1960 | March 1960 | Apr. 30, 1960 | Mar. 31, 1960 |
| U. S. | 366.4 | *379.4 | 169.5 | *164.1 | 767.9 | *794.7 | 128.0 | 89.5 |
| Arkansas | 8.9 | 5.0 | 1.3 | 1.7 | 19.0 | 10.9 | 6.4 | 3.7 |
| Illinois | 117.3 | 118.9 | 54.7 | 54.5 | 233.3 | 238.7 | 46.5 | 28.8 |
| Indiana | [2] | 38.5 | [2] | [2] | [2] | 81.1 | [2] | [2] |
| Iowa | 57.6 | *60.1 | 21.6 | *24.2 | 126.2 | *131.4 | 20.6 | 16.5 |
| Minnesota | 26.7 | 29.3 | 30.7 | 30.0 | 57.4 | 63.9 | 3.5 | 5.5 |
| Mississippi | 11.7 | 13.6 | 3.7 | 3.0 | 24.5 | 28.4 | 7.6 | 5.6 |
| Missouri | [2] | [2] | 1.3 | [2] | [2] | [2] | [2] | [2] |
| Nebraska | [2] | [2] | [2] | [2] | [2] | [2] | [2] | [2] |
| N. Carolina | 4.8 | 5.0 | 1.5 | 1.4 | 10.7 | 11.2 | 2.3 | 1.5 |
| Ohio | 35.0 | 30.8 | 13.2 | 6.8 | 71.7 | 62.7 | 9.8 | 7.7 |
| Tennessee | 24.9 | 29.4 | 7.0 | 5.8 | 53.0 | 58.0 | 9.3 | 5.4 |
| All other | 79.5 | 48.8 | 34.5 | 36.7 | 172.1 | 108.4 | 22.0 | 14.8 |

Note: Detail figures may not add to totals because of independent rounding. [1] Includes millfeed (hull meal). [2] Included in "All other" to avoid disclosure of figures for individual companies. *Revised.

**OILSEED MEALS.** Oilseed meal consumption during March was above last year with an increase of 100,000 tons in cottonseed meal more than offsetting a drop of around 50,000 tons of soybean meal, reports Agricultural Marketing Service, USDA. Consumption of 6.3 million tons of oilseed meals the first half of the season was 190,000 tons below last year. Soybean meal disappearance of 4.3 million tons was down by 280,000 tons, while cottonseed meal disappearance of 1.7 million was up by 200,000. Consumption of linseed meal was down sharply but that for other oilseed meals was about the same.

Exports of oilseed meals totaled nearly 600,000 tons the first half of the season or nearly double the same period last season.

**Oilseed meals: Production, stocks, foreign trade, and domestic disappearance, October 1959-March 1960 and 1958-59 (1,000 tons)**

| | Stocks Oct. 1[1] | Production | Imports[2] | Exports[2] | Domestic disappearance | Stocks Mar. 31[1] |
|---|---|---|---|---|---|---|
| | October 1959-March 1960 | | | | | |
| Soybean | 58.5 | 4,736.8 | 0 | 423.2 | 4,282.6 | 89.5 |
| Cottonseed | 97.0 | 1,867.9 | 21.1 | 120.5 | 1,724.7 | 140.8 |
| Linseed | 33.3 | 215.0 | 2.0 | 47.1 | 155.0 | 48.2 |
| Copra | ..... | 61.0 | 1.6 | ..... | 62.6 | ..... |
| Peanut | 1.8 | 30.7 | 0 | ..... | 28.0 | 4.5 |
| Total | 190.6 | 6,911.4 | 24.7 | 590.8 | 6,252.9 | 283.0 |
| | October 1958-March 1959 | | | | | |
| Soybean | 48.1 | 4,902.3 | 0 | 290.1 | 4,563.6 | 96.7 |
| Cottonseed | 71.2 | 1,518.6 | 87.1 | 4.9 | 1,532.2 | 139.8 |
| Linseed | 26.3 | 233.2 | 2.4 | 12.6 | 241.7 | 7.6 |
| Copra | 0.6 | 52.1 | 16.8 | ..... | 68.8 | 0.7 |
| Peanut | 1.5 | 37.7 | 0 | ..... | 35.0 | 4.2 |
| Total | 147.7 | 6,743.9 | 106.3 | 307.6 | 6,441.3 | 249.0 |

Note: Dash indicates data is not available. [1] Stocks at processing plants only. [2] Partly estimated.


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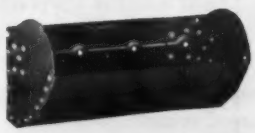

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**TERMINAL STOCKS.** Agricultural Marketing Service's commercial grain stocks reports for close of business on Friday or Saturday preceding date of report (1,000 bushels).

| | Apr. 26 | May 3 | May 10 | May 17 |
|---|---|---|---|---|
| **U. S. soybeans in stock and afloat at domestic markets** | | | | |
| Atlantic Coast | 3,666 | 3,619 | 2,854 | 2,547 |
| Gulf Coast | 3,585 | 3,273 | 2,916 | 2,828 |
| Northwestern | 5,827 | 5,218 | 4,580 | 3,160 |
| Lower Lake | 10,262 | 9,044 | 8,609 | 7,737 |
| East Central | 4,169 | 3,535 | 3,767 | 3,624 |
| West Central and Southwestern | 3,528 | 4,005 | 3,846 | 3,758 |
| Total current week | 31,037 | 28,694 | 26,572 | 23,654 |
| Total year ago* | 24,613 | 23,224 | 22,307 | 21,517 |
| **U. S. soybeans in store and afloat at Canadian markets** | | | | |
| Total current week | 55 | 13 | 197 | 151 |
| Total year ago* | 0 | 0 | 62 | 157 |
| **Total stocks in above positions** | | | | |
| Current week | 31,092 | 28,707 | 26,769 | 23,805 |
| Year ago* | 24,613 | 23,224 | 22,369 | 21,674 |

**Primary receipts (1,000 bu.) of soybeans at important interior points for week ending:**

| | Apr. 22 | Apr. 29 | May 6 | May 17 |
|---|---|---|---|---|
| Chicago | 105 | 71 | 62 | 114 |
| Duluth | 63 | 87 | 100 | 96 |
| Indianapolis | 8 | 8 | 14 | 29 |
| Kansas City | 145 | 99 | 96 | 178 |
| Minneapolis | 101 | 79 | 327 | 437 |
| Omaha | 41 | 30 | 21 | 31 |
| Peoria | 14 | 6 | 2 | 4 |
| Sioux City | — | 9 | — | — |
| St. Joseph | 4 | — | — | 6 |
| St. Louis | 8 | 2 | — | 10 |
| Toledo | 80 | 70 | 43 | 67 |
| Totals | 569 | 461 | 665 | 972 |
| Last year | 497 | 512 | 688 | 755 |
| CCC-owned stocks of soybeans in Chicago | 1,139 | 1,139 | 1,139 | 1,139 |
| Total Chicago soybean stocks | 7,617 | 6,916 | 6,481 | 5,911 |

**FACTORY USE VEGETABLE OILS** for February and March 1960. Reported by Bureau of the Census (million pounds).

**Selected edible oils: Production, consumption, and factory and warehouse stocks March 1960 and February 1960**

| | Cottonseed oil | | Soybean oil | |
|---|---|---|---|---|
| | Mar. 1960 | Feb. 1960 | Mar. 1960 | Feb. 1960 |
| Production: | | | | |
| Crude oils | 195.9 | 209.0 | 378.5 | 335.4 |
| Refined oils (once-refined)[1] | 159.6 | 150.9 | 291.4 | 287.7 |
| Consumption in refining[2] | 172.3 | 163.3 | 304.4 | 296.1 |
| Consumption in selected edible and inedible products,[2] total | 102.6 | 100.6 | 287.9 | 270.5 |
| Consumption in edible products, total | 102.2 | 100.3 | 270.1 | 254.4 |
| Baking or frying fats | 30.8 | 28.4 | 96.2 | 93.6 |
| Salad or cooking oil | 59.2 | 59.7 | 71.1 | 63.9 |
| Margarine | 9.8 | 9.9 | 99.3 | 94.4 |
| Other edible products[3] | 2.4 | 2.3 | 3.5 | 2.5 |
| Stocks, end of month,[2] total | 514.8 | 477.0 | 565.3 | *541.2 |
| Crude oils | 167.1 | 179.9 | 342.0 | 328.5 |
| Refined oils | 347.7 | 297.1 | 223.3 | *212.7 |

* Revised. [1] Production of refined oils covers only once-refined oil. Degummed soybean oil is reported as crude oil. [2] Includes hydrogenated fats and other fats and oils "in process," (e.g. refined cottonseed includes stocks of stearin). [3] Includes confectioners fats.

**MELLORINE.** U. S. production of mellorine and other frozen desserts made with fats and oils other than milkfat during April was estimated at 3,990,000 gallons, according to the crop reporting board. This was 8% above the April 1959 output and 38% greater than the 1954-58 average for the month. The January-April cumulative production totaling 12,975,000 gallons this year was 9% more than in the first 4 months of 1959 and 37% above average.

**Production of "mellorine-type" frozen desserts, United States, 1960**

| | 1954-58 Avg. [1] | 1958 [1] | Estimated 1959 | Estimated 1960 | Change from '54-58 Av. | Change from 1959 |
|---|---|---|---|---|---|---|
| | Thousand gallons | | | | Percent | |
| January | 1,861 | 2,238 | 2,325 | 2,535 | + 36 | + 9 |
| February | 2,097 | 2,335 | 2,505 | 2,890 | + 38 | + 15 |
| March | 2,604 | 2,759 | 3,440 | 3,560 | + 37 | + 3 |
| April | 2,898 | 3,415 | 3,685 | 3,990 | + 38 | + 8 |
| Four month total | 9,460 | 10,747 | 11,955 | 12,975 | + 37 | + 9 |

[1] From enumerations.

**SUPPLY, DISTRIBUTION** of soybeans 1953-1960, reported by Agricultural Marketing Service (1,000 bushels).

| Year and quarter | Supply: Stocks at beginning of period[1] — Farms | Terminal markets | CCC[2] | Processing plants | Interior mills[3] | Total stocks | Production | Total supply |
|---|---|---|---|---|---|---|---|---|
| **1953-58 av.** | | | | | | | | |
| Oct.-Dec | 3,168 | 1,649 | 331 | 621 | 1,242 | 7,011 | 383,385 | 390,396 |
| Jan-Mar | 140,702 | 16,652 | 58 | 66,829 | 62,504 | 286,745 | | 286,745 |
| Apr-Jun | 88,614 | 13,052 | 7 | 47,889 | 38,722 | 188,284 | | 188,284 |
| Jul-Sept | 21,375 | 6,752 | 331 | 25,388 | 18,356 | 72,203 | | 72,203 |
| Season | | | | | | 7,011 | 383,385 | 390,396 |
| **1958-59** | | | | | | | | |
| Oct-Dec | 2,191 | 2,635 | 2,012 | 4,649 | 9,596 | 21,083 | 579,713 | 600,796 |
| Jan-Mar | 201,993 | 42,767 | 1,954 | 98,610 | 126,005 | 471,329 | | 471,329 |
| Apr-Jun | 125,815 | 26,839 | 1,895 | 73,993 | 95,956 | 324,498 | | 324,498 |
| Jul-Sept | 35,781 | 16,263 | 102 | 44,883 | 60,310 | 157,339 | | 157,339 |
| Season | | | | | | 21,083 | 579,713 | 600,796 |
| **1959-60** | | | | | | | | |
| Oct-Dec | 17,105 | 7,550 | 873 | 4,217 | 32,645 | 62,390 | 537,895 | 600,285 |
| Jan-Mar | 198,393 | 40,512 | 327 | 104,623 | 110,248 | 454,103 | | 454,103 |
| Apr-Jun | 143,003 | 33,731 | 159 | 64,803 | 68,043 | 309,739 | | 309,739 |

| Year and quarter | Distribution: Used for seed | Crushed at mills | Net exports[4] | Feed and residual[5] | Total |
|---|---|---|---|---|---|
| **1953-58 av.** | | | | | |
| Oct.-Dec. | — | 73,865 | 32,333 | -2,547 | 103,651 |
| Jan.-Mar. | — | 73,406 | 12,769 | 12,286 | 98,461 |
| Apr.-June | 25,599 | 71,354 | 11,800 | 7,328 | 116,081 |
| July-Sept. | — | 64,385 | 10,820 | -12,202 | 63,003 |
| Season | 25,599 | 283,010 | 67,722 | 4,865 | 381,196 |
| **1958-59** | | | | | |
| Oct.-Dec. | — | 101,435 | 38,038 | -10,006 | 129,467 |
| Jan.-Mar. | — | 106,663 | 22,738 | 17,430 | 146,831 |
| Apr.-June | 27,134 | 104,127 | 27,510 | 8,388 | 167,159 |
| July-Sept. | — | 89,000 | 21,786 | -15,837 | 94,949 |
| Season | 27,134 | 401,225 | 110,072 | -25 | 538,406 |
| **1959-60** | | | | | |
| Oct.-Dec. | — | 105,183 | 50,641 | -9,642 | 146,182 |
| Jan.-Mar. | — | 99,133 | 24,961 | 20,270 | 144,364 |
| Apr.-June | 29,000 | | | | |

[1] Oct. 1 stocks in all positions include only old-crop soybeans. [2] Owned and stored in bins or other storage owned or controlled by CCC. Additional CCC-owned grain is included in other positions. [3] All off-farm storages not otherwise designated. [4] Exports minus imports, which are negligible. [5] Mostly quantity fed, but includes waste, loss, and statistical errors in estimates.

**IMPORTS.** Imports of soybean seed July 1, 1959, through Apr. 30, 1960, totaled 13,800 pounds, all from Canada, according to Agricultural Marketing Service, USDA.


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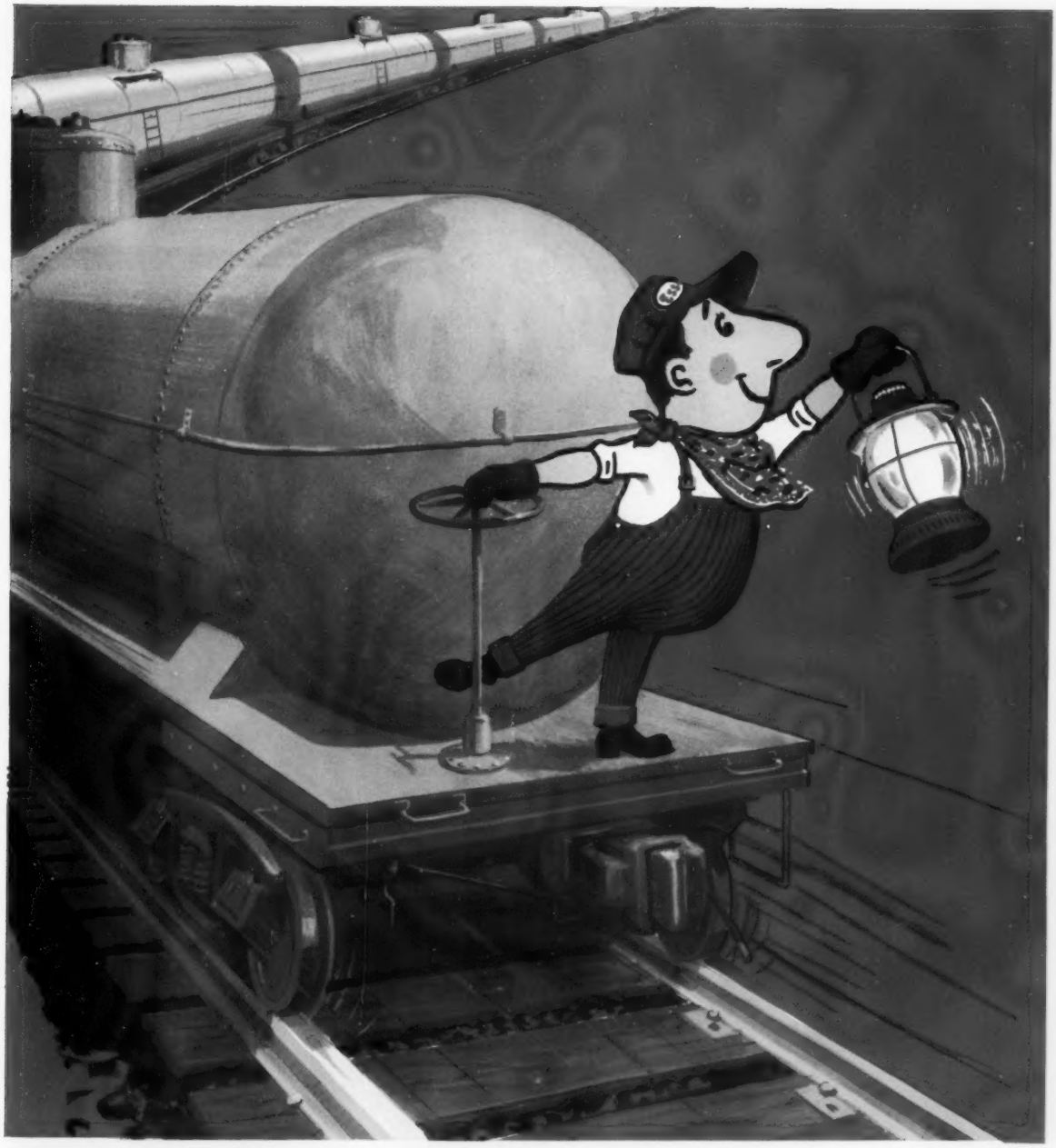

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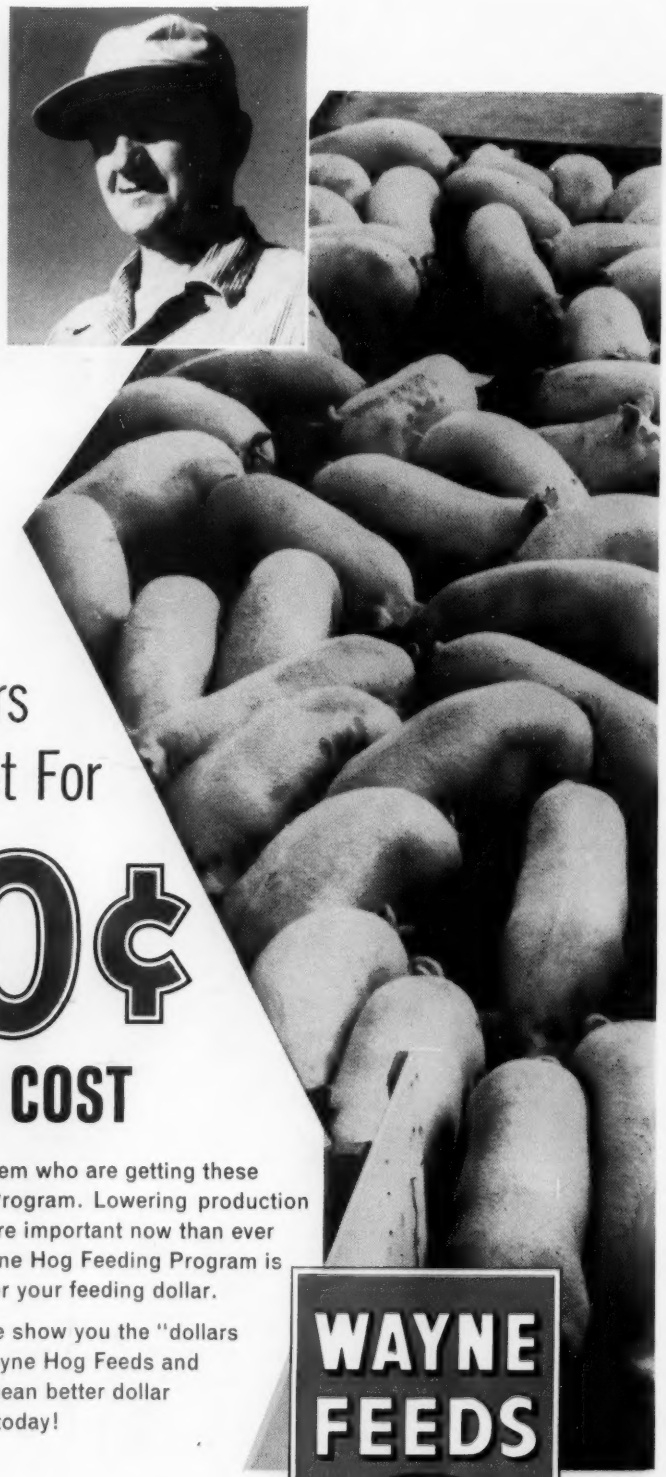

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